Life and Physical Sciences
Texas A&M University

Core Curriculum Cover Sheet

Initial Request for a course to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Plant Pathology & Microbiology

2. Course prefix and number: BESC 201

3. Texas Common Course Number: ESCI 1301

4. Complete course title: Introduction to Bioenvironmental Sciences

5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:

   □ Communication
   □ Mathematics
   □ Life and Physical Sciences
   □ Language, Philosophy and Culture
   □ Creative Arts
   □ American History
   □ Government/Political Science
   □ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:

   □ Yes  □ No

8. How frequently will the class be offered? Fall and Spring semesters

9. Number of class sections per semester: One

10. Number of students per semester: 120

11. Historic annual enrollment for the last three years: 244  219  165

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:

   [Signature]  2/8/2013
   Course Instructor

   [Signature]  2/7/2013
   Date
   Department Head

   [Signature]  2/14/2013
   Date
   College Dean/Designee

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Introduction to Bioenvironmental Sciences surveys environmental science highlighting the roles and effects of biological components, including most significantly humans. A further emphasis is placed on scientific literacy when interpreting all sides of environmental issues.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Learning Outcomes:
- Apply information learned through readings and other media posted within the learning management system
- Comprehend the interdisciplinary concepts integral to environmental science
- Analyze current environmental issues and evaluate potential solutions
- Assess the costs and benefits of conservation vs. remediation or technological solutions

Assessment:
- Students will take weekly online quizzes to assess their comprehension of the reading and other media. Further they will have 4 unit exams given in class (multiple choice).

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Learning Outcomes:
- Relate the features of human populations to different types of environmental degradation
- Recognize the impact of globalization on the environment
- Recognize the ecological footprints left by different peoples of the Earth
- Participate in class discussions and actively listen to student presentations
- Work effectively in a group to create a presentation about an assigned country
- Recognize the variety of worldviews associated with the environment
- Excavate and describe your own worldview and speculate about how and why you formed it

Assessment:
- Students will work in groups to create podcast presentations that highlight the demographic and environmental issues of a country. Assessment of this includes the quality of the end product (based on a rubric provided, used by both the instructor and members of the class via peer review) and also the quality of individual participation in its creation (based on within group reflection on peer performance).
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Students will respond to journaling prompts within the eCampus journal tool. This assessment is designed to encourage students to reflect on the relationship between their worldview and the concepts in the course. Thus, grading will be based on both effective communication and also evidence of reflection and connection.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Learning Outcomes:
- Apply information learned through readings and other media
- Analyze current environmental issues and evaluate potential solutions
- Assess the costs and benefits of conservation vs. remediation or technological solutions

Assessment:
- Students will take weekly online quizzes and also in class exams to assess their ability to apply information to make informed conclusions.
- Students will respond to journal prompts within the eCampus journal tool. This assessment is designed to encourage students to reflect on the relationship between their worldview and the concepts in the course. Thus grading will be based on both effective communication and also evidence of reflection and connection.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Learning Outcome:
- Work effectively in a group to create a presentation about an assigned country

Assessment:
- Students will work in groups to create podcast presentations that highlight the demographic and environmental issues of a country. Assessment of this includes the quality of the end product (based on a rubric provided, used by both the instructor and members of the class via peer review) and also the quality of individual participation in its creation (based on within group reflection on peer performance)

The assessment of team work will be most evidenced by within group feedback provided to the instructor and to the students.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Syllabus
BESC 201 Introduction to Bioenvironmental Sciences
Spring Semester, 2014

Time: MWF 11:30-12:20
Location: TBA
Instructor: Dr. Libo Shan
Assistant Professor, Plant Molecular Biology
132A Borlaug
979-845-8818
lshan@tamu.edu
Office Hours: 9:30 – 11 M&W; or by appointment

Description
Introduction Bioenvironmental Sciences (3cr) provides students with a broad survey of environmental science with an emphasis on scientific literacy, current events, global and international issues, and historic context.

Prerequisites
None

Textbook

Essential Environment: The Science Behind the Stories, Fourth Edition
Author(s): Jay Withgott; Matthew Laposata

Learning Outcomes

- Apply information learned through readings and other media posted within the learning management system.
- Comprehend the interdisciplinary (e.g. agricultural science, biology, chemistry, ecology, economics, geology, history, policy, etc) concepts integral to environmental science.
- Analyze current environmental issues and evaluate potential solutions.
- Relate the features of human populations to different types of environmental degradation.
- Assess the costs/benefits of conservation vs. remediation or technological solutions.
- Recognize the impact of globalization on the environment.
- Recognize the ecological footprints left by different peoples of the Earth.
- Participate in class discussions and actively listen to student presentations.
- Work effectively in a group to create an presentation about an assigned country
- Recognize the variety of worldviews associated with the environment
- Excavate and describe your own worldview and speculate about how and why you formed it.
USING eCampus

1. **Sign in** to Blackboard Learn at [http://eCampus.tamu.edu](http://eCampus.tamu.edu) by following the link to NETID Login.
2. Contact your instructor for any **technical assistance** you may need with this course. Help Desk Central cannot assist in resolving technical issues with Blackboard Learn.
3. **Tutorials** for using Blackboard Learn are available at [http://ondemand.blackboard.com/students.htm](http://ondemand.blackboard.com/students.htm) in the On Demand Learning Center for Students.
4. A community for all students participating in eCampus is accessible from Blackboard Learn. You will click on Community tab located at the top of the screen. The student community is called eCampus Student Community. This space is for students to discuss their experience and to seek assistance, if needed from other students. The space is not moderated by any instructor. Questions to instructors should not be posted here.

### Reading quiz and Exam Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Reading</th>
<th>Reading Assessment</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Jan-14</td>
<td>Chapter 1. Science and Sustainability: An Introduction to Environmental Science</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>20-Jan-14</td>
<td>Chapter 2. Environmental Systems: Chemistry, Energy, and Ecosystems</td>
<td>2</td>
<td>UNIT 1</td>
</tr>
<tr>
<td>27-Jan-14</td>
<td>Chapter 3. Evolution, Biodiversity, and Population Ecology</td>
<td>3</td>
<td></td>
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<tr>
<td>3-Feb-14</td>
<td>Chapter 4. Species Interactions and Community Ecology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>10-Feb-14</td>
<td>Chapter 5. Environmental Economics and Environmental Policy</td>
<td>5</td>
<td></td>
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<tr>
<td>17-Feb-14</td>
<td>Chapter 6. Human Population</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>24-Feb-14</td>
<td>Chapter 10. Environmental Health and Toxicology</td>
<td>7</td>
<td>UNIT 2</td>
</tr>
<tr>
<td>3-Mar-14</td>
<td>Chapter 12. Managing Our Waste</td>
<td>8</td>
<td></td>
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<tr>
<td>3-Mar-14</td>
<td>Chapter 11. The Urban Environment: Creating Sustainable Cities</td>
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<tr>
<td>10-Mar-14</td>
<td><strong>SPRING BREAK</strong></td>
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<tr>
<td>17-Mar-14</td>
<td>Chapter 7. Soil, Agriculture, and the Future of Food</td>
<td>9</td>
<td></td>
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<tr>
<td>24-Mar-14</td>
<td>Chapter 8. Biodiversity and Conservation Biology</td>
<td>10</td>
<td>UNIT 3</td>
</tr>
<tr>
<td>31-Mar-14</td>
<td>Chapter 9. Forests, Forest Management, and Protected Areas</td>
<td>11</td>
<td></td>
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<tr>
<td>7-Apr-14</td>
<td>Chapter 13. Atmospheric Science and Air Pollution</td>
<td>12</td>
<td></td>
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<tr>
<td>14-Apr-14</td>
<td>Chapter 14. Global Climate Change</td>
<td>13</td>
<td>UNIT 4</td>
</tr>
<tr>
<td>21-Apr-14</td>
<td>Chapter 15. Nonrenewable Energy Sources, Their Impacts, and Energy Conservation</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>28-Apr-14</td>
<td>Chapter 15. Renewable Energy Alternatives</td>
<td>15</td>
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</tr>
</tbody>
</table>

*The reading assessments will be posted each week at noon on Wednesday and be available for 24 hours before they close at noon on Thursday.*

**The unit exams will be given the last Friday of each unit.*
Grading

There will be **15 online assessments** via eCampus (LMS Blackboard) used to measure mastery of concepts in reading materials. In addition the assessments will serve as reviews for materials that will be on the unit exams. The 15 assessments will **count for 30% of the overall grade (2.0 points each)**. The reading assessments will be posted each week at noon on Wednesday and be available for 24 hours before they close at noon on Thursday. There will be 1 hour to complete the quiz once you start it.

There will be **four unit exams**, each worth **10% of the course grade**. The exams will be based on material from readings, posted resources and class discussions. One week prior to the exam a review will be posted to guide your studying. The unit exams will be given the last Friday of each unit. Make-up exams require evidence of an excused absence ([http://student-rules.tamu.edu/rule7.htm](http://student-rules.tamu.edu/rule7.htm)).

**Attendance and Class Participation** will account for **10% of the grade**. An attendance sign-in sheet is distributed each day of class. Each unexcused absence is results in a deduction of 0.5 points up to a total of 5 points associated with attendance total. Participation will involve the subjective assessment by the instructor of degree to which you contribute meaningfully to class discussion as well as evidence of active listening.

**Excavating your worldview (Journal reflections):** At the beginning of each unit you will receive prompts that related to the upcoming course concepts and their relationship to a worldview. Throughout the unit as you learn you should think about these relationships and respond the prompts. Each journaling prompt will end at the end of the unit. Journal entries for each unit will count for 2.5 points each = 4 X 2.5=10 points total.

**Group Presentations:** You will work in groups of 6 to create a 4-5 minute podcast presentation that highlights the demographics and environmental issues of an assigned country. The presentations will be assessed based on a rubric provided via eCampus, to include some portion of the overall presentation grade based on peer-review by other students in the course and some portion of the individual student grade based on within group peer evaluation of your contribution.

<table>
<thead>
<tr>
<th>Reading Assessments</th>
<th>30%</th>
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<tbody>
<tr>
<td>Unit Exam I</td>
<td>10%</td>
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<tr>
<td>Unit Exam II</td>
<td>10%</td>
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<tr>
<td>Unit Exam III</td>
<td>10%</td>
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<tr>
<td>Unit Exam IV</td>
<td>10%</td>
</tr>
<tr>
<td>Attendance and Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Journal Reflections</td>
<td>10%</td>
</tr>
<tr>
<td>Group Presentation</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Americans with Disabilities Act (ADA) Policy Statement**

(ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room B118 of Cain Hall or call 845-1637.

**Academic Integrity Statement**

Aggie Honor Code “An Aggie does not lie, cheat, or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: [www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Department of Biology

2. Course prefix and number: BIOL 101

3. Texas Common Course Number: 1311, 1111, 1411

4. Complete course title: Botany

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [X] Life and Physical Sciences
   - [ ] Language, Philosophy and Culture
   - [ ] Creative Arts
   - [ ] American History
   - [ ] Government/Political Science
   - [ ] Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - [ ] Yes
   - [X] No

8. How frequently will the class be offered? every spring semester

9. Number of class sections per semester: 8

10. Number of students per semester: 192

11. Historic annual enrollment for the last three years: '09-10 = 136 '10-11 = 110 '11-12 = 121

   This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:

   Ira E. Greenspan
   Course Instructor
   [Director, BIOL LOWER DIVISION]

   Approvals:
   [Signature]
   [Department Head]

   [Signature]
   [College Dean/Designee]

   Date: 2/5/13

   Date: 2/5/13

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See form instructions for submission/approval process.
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Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Biology 101 is an introductory botany course that covers the anatomy, development, physiology, reproduction, genetics, evolution, and diversity of algae and non-vascular and vascular plants. The development of agriculture and its effects on human society are explored, as well as human manipulation of plants. Weekly laboratory exercises focus on using the scientific method to reinforce and further explore lecture topics.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

The scientific method is the basis of both lecture and lab. Lectures present knowledge obtained from historical and current investigations and encourage students to consider ways in which this knowledge can be applied or furthered. Lecture exams assess students' ability to analyze and think critically about information presented throughout the course. Laboratory exercises involve designing and performing experiments to test hypotheses and interpreting the data gathered. Detailed observation and comparison of organisms from single-celled algae to flowering plants, along with experiments with transgenic plants, contribute to an understanding of evolution and provide a framework for the discussion of emergent research in plant systematics and genetics. Lab assessments include lab reports, weekly quizzes, and a short research topic paper which is presented to the class.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Lab reports and quizzes require written and graphic interpretation of experimental results via discussion, graphs, tables, charts, and drawings. Laboratory sessions include question and answer sessions to reinforce learning. The final lab project involves writing a presentation, delivering it in front of the lab section, and facilitating discussion.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Lab exercises covering cell theory and division, plant development, heredity, enzymes, photosynthesis, respiration, protein synthesis, and transgenic plants involve the generation, analysis, and interpretation of exercise-specific data. Results are summarized in writing and/or tabular or graphic form for lab reports and quizzes. The plant diversity labs allow observation and analysis of variation in anatomy, physiology, and reproduction. Lab quizzes over the diversity labs emphasize recognition and analysis of features. Lectures and lecture exams invite the students to consider how research conclusions could be used to make decisions about land use, nutrition, transgenic plant development, etc.
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Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Nine of thirteen lab exercises require the students to work in groups to set up, run, and collect data on the experiments. In some cases each group performs a different part of the experiment and the groups interact to combine results into one synthesis for the whole section. One lab requires each student to prepare a short presentation, present it to the class, and lead a discussion. In all cases students must individually produce their own written results. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
BOTANY 101 - GENERAL INFORMATION - Fall 2012

COURSE DESCRIPTION (4 credits): The origin of agriculture and its profound effect on the development of human society are integrated with classical information on plant anatomy, physiology and evolution together with contemporary information on gene structure, function, cloning and the ways in which transgenic plants are created and their importance in feeding the burgeoning world population. The course includes laboratory exercises that reinforce the lecture topics and a CD is available that contains the course material in PDF format.

COURSE OBJECTIVES: Students are expected to attend both lecture and lab where they will be introduced to the study of plant biology. Using plant models, students study the scientific method, the chemical basis of life, cell structure and biology, and the principles of genetics and evolution. Upon completion of the course, students will be able to recognize and classify the major plant groups. In addition they will be able to describe and discuss cell structure and function and the physiological processes of photosynthesis and respiration. The successful student will be able to discuss the relationships of the fundamental biochemical events of DNA replication, transcription and translation to cell division and gene expression. Students will be able to isolate DNA, setup PCR reactions and interpret gel electrophoresis results. Finally, they will be able to discuss the relevance of plants and scientific investigation to human society.

LECTURE- MWF 9:10-10 a.m., BSBE 115. A synopsis of lecture notes and overhead material is located at http://elearning.tamu.edu

Exam review sessions - 7:30 to 9:00 p.m.: Thursday Sept 20; Tuesday Oct 16; Thursday Nov 8 (all in BSBE 115). The review for the Final Exam (December 7) will be in the normal class time and place.


LABORATORY- All laboratory sections meet in Heldenfels 305. There are no makeup labs. If you miss lab for a university approved reason, you must notify your instructor within two class days and provide documentation within one week to be considered for a makeup assignment. See http://student-rules.tamu.edu section 7 for more information. Note: The Texas A&M University Explanatory Statement of Absence Form is NOT an acceptable excuse for this course.

LECTURE - Please refer to the class notes at http://elearning.tamu.edu for more information. If you miss an exam for a university approved reason you must contact Dr. Hall within 2 working days of the absence and show written evidence within 1 week to substantiate the absence was for an accepted reason. See http://student-rules.tamu.edu/ section 7. The Lower Division Biology Program DOES NOT accept the Texas A&M University Explanatory Statement of Absence Form as an excused absence. In order to make up an exam, you must obtain a signed makeup authorization from Dr. Hall and bring the form to Held 315. It is your responsibility to notify Dr. Hall of your absence, provide verification, and insure your name is on the list for the make-up exam. Make-up exams typically consist of essay and short answer questions and will NOT be scheduled without instructor permission.

All make-up exams will be in Heldenfels Hall, room 200 from 5:30-6:30 p.m. Make-up for Exam 1 will be on Oct. 4th, makeup for Exam 2 will be Nov. 1, and makeup for Exam 3 will be Nov. 29. It is your responsibility to notify your instructor of your absence and to insure your name is on the sign-up list for the appropriate make-up exam. Make-up exams typically consist of essay and short answer questions and they will NOT be rescheduled unless there is proof of authorized absence.

Determination of your course grade will be as follows:

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>Lab</th>
<th>Sub Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 lecture examinations, 100 points each</td>
<td>Lab Quizzes/writeups, 12 at 10 points each</td>
<td>300</td>
</tr>
<tr>
<td>1 final examination (comprehensive)</td>
<td>Two laboratory reports at 15 points each</td>
<td>130</td>
</tr>
<tr>
<td>Sub Total</td>
<td>Lab participation points</td>
<td>430</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td>170</td>
</tr>
</tbody>
</table>

Note: Of the total possible points (600), 170 will be earned in the Laboratory.
To determine your grade: Add points scored for Exams I through IV; add total points for lab activities. To this total add the total PopQuiz bonus points. Divide this total by 6 to get a % score. Normally, 90-100% = A; 80-89% = B; 70-79% = C and 60-69% = D.

Bonus point opportunities - Pop Quizzes will be held in class without prior notice! The instructor has no obligation to provide any other means for announcement of these quizzes. There will be NO opportunities to make-up these quizzes as they are totally BONUS points.

Computer access information
Activate your Net ID and password at http://gateway.tamu.edu/ then use these codes to check the grade information posted to http://elearning.tamu.edu. You can also use these codes to access the HOWDY portal at https://howdy.tamu.edu.

Grade Checks & Exam Challenges
Please note that grade checks and exam challenges can only be made by computer application. Submit requests for grade checks via the Lower Division Biology Homepage at: http://www.bio.tamu.edu/lid. You will be notified by email when a grade check is ready for pickup. Come to 315 Heldenfels and show your I.D. to pickup a grade check. Exam challenges are submitted via an Exam Challenge Form at: http://www.bio.tamu.edu/lid. All exam challenge forms will be forwarded to Dr. Hall for review.

Re-grading: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment, so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

Academic Integrity: “An Aggie does not lie, cheat or steal or tolerate those who do”. The Honors Council provides a means to report and appeal allegations of academic dishonesty. Please see the Rules and Procedures at http://www.tamu.edu/aggiehonor. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple/duplicate submissions, plagiarism and complicity in these offenses. Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of the student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, is sufficient grounds to initiate an academic dishonesty case. See http://aggiehonor.tamu.edu/Descriptions/.

Copyright: The handouts used in this course are copyrighted. "Handouts" are all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, in-class materials, class notes on the web, review sheets, problem sets and copy packets. You do not have the right to copy them unless you are expressly granted permission. As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules under the section "Scholastic Dishonesty".

Statement on Disabilities: The Americans with Disabilities Act is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities. If you believe you have a disability requiring accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall, room B118 or call 845-1637 (website http://disability.tamu.edu).
<table>
<thead>
<tr>
<th>Lecture Schedule and Subject</th>
<th>Reading Assignment</th>
<th>Lab Manual Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Segment I - Plant basics</strong></td>
<td></td>
<td></td>
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<tr>
<td>Aug 27 M Seeds - Germination</td>
<td>Ch. 6 (87-88); CD</td>
<td>Ex 1. The Cell Theory</td>
</tr>
<tr>
<td>29 W Plant Cell components</td>
<td>Ch. 2 (16-23); CD</td>
<td>Seed germination setup</td>
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<tr>
<td>Sep 31 F Plant Tissues</td>
<td>Ch. 3 (28-32); CD</td>
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<tr>
<td><strong>Sept</strong></td>
<td></td>
<td></td>
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<tr>
<td>5 W Roots Sols and Water</td>
<td>Ch. 3 (33-35) and Ch. 4 (49-50); Ch. 3 (34-35) and Ch. 4 (49-50); Ch. 11 (172-180) CD</td>
<td>Ex 3. Seedling Development</td>
</tr>
<tr>
<td>7 F An origin-early sites-domesticated crops</td>
<td></td>
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<tr>
<td><strong>Oct</strong></td>
<td></td>
<td></td>
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<tr>
<td>10 M Angiosperm life cycle</td>
<td>Ch. 5-6 (69-98); CD</td>
<td>Ex 5. Enzymes</td>
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<tr>
<td>12 W Carbohydrates Lipids, amino acids-Proteins</td>
<td>Ch. 1.1(8-12); CD</td>
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</tr>
<tr>
<td>14 F Photosynthesis Light (energy) reactions</td>
<td>Ch. 4.1 (56-61); CD</td>
<td></td>
</tr>
<tr>
<td>17 M Photosynthesis Dark (chemical) reactions</td>
<td>Ch. 4 (67); CD</td>
<td>Ex 6. Photosynthesis.</td>
</tr>
<tr>
<td>19 W Respiration</td>
<td>Ch. 2 (24-27); CD</td>
<td>Germination paper due</td>
</tr>
<tr>
<td>20 R <strong>Review session: 7:30 - 9:00 p.m</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 F Cell cycle; cell division - Mitosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 M ***EXAM I *** (to Respiration)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 W Cell cycle; cell division - Meiosis</td>
<td>Ch. 2 (24-27); CD</td>
<td>Ex 7. Cellular Respiration</td>
</tr>
<tr>
<td>28 F Genetics - Mendel - DNA replication</td>
<td>Ch. 7 (99-112); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Oct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 M Nucleic Acids-DNA replication</td>
<td>CD; Ch. 7 (12-14)</td>
<td>Ex 2. Cell division, mitosis, meiosis</td>
</tr>
<tr>
<td>3 W Gene Structure-transcription-translation</td>
<td>See CD; Ch. 7.2 (112-115)</td>
<td></td>
</tr>
<tr>
<td>5 F McClintock-transposons-epigenetics</td>
<td>Ch. 12 (192-194); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Segment II - Plant diversity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 M Taxonomy ; Plant systematics &amp; evolution</td>
<td>Ch. 8 (118-133) CD</td>
<td>Ex 4. Genetics and Heredity</td>
</tr>
<tr>
<td>10 W Algae</td>
<td>Ch. 22 (382-398)</td>
<td></td>
</tr>
<tr>
<td>12 F Dryophytes</td>
<td>Ch. 9 (134-142); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Oct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 M Ferns; fern allies (seedless vasc plants)</td>
<td>Ch. 9 (142-144); CD</td>
<td>Ex 8. Non-seed bearing plants</td>
</tr>
<tr>
<td>16 T <strong>Review session - 7:30 to 9:00 p.m.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 W Gymnosperms</td>
<td>Ch. 9 (144-149); CD</td>
<td></td>
</tr>
<tr>
<td>19 F ***EXAM II *** (to Ferns - seedless vasc plants)</td>
<td></td>
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<tr>
<td><strong>Oct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 M Good fungi - Bad fungi</td>
<td>Ch. 23-25 (399-462); CD</td>
<td>Ex 9. Cone-bearing plants</td>
</tr>
<tr>
<td>24 W Grasses</td>
<td>Ch. 12 (183-186)</td>
<td></td>
</tr>
<tr>
<td>26 F Legumes and starchy staples</td>
<td>Ch. 13 (205-217); Ch. 14 (218-232)</td>
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<tr>
<td><strong>Nov</strong></td>
<td></td>
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<tr>
<td>29 M Plant nutrition</td>
<td>See CD; Ch. 15 (235-248)</td>
<td>Ex. 10. Flowering Plant Anatomy</td>
</tr>
<tr>
<td>31 W Plant Growth and Development</td>
<td>See CD; Ch. 15 (246-247)</td>
<td></td>
</tr>
<tr>
<td>Nov 2 F Ecology, Nutrient cycles</td>
<td>Ch. 26 (465-490)</td>
<td></td>
</tr>
<tr>
<td><strong>Nov</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 M Gene Cloning and Biotechnology</td>
<td>See CD</td>
<td>Ex 12. Transgenic Plants -GUS expression In Arabidopsis -1</td>
</tr>
<tr>
<td>7 W Gene synthesis</td>
<td>See CD</td>
<td>Ex 12. Transgenic Plants -GUS expression In Arabidopsis -2</td>
</tr>
<tr>
<td>8 R <strong>Review session - 7:30 to 9:00 p.m.</strong></td>
<td>See CD; Ch. 15 (249-250)</td>
<td>Ex 11. Protein Synthesis</td>
</tr>
<tr>
<td>9 F Genetic Engineering of Plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nov</strong></td>
<td></td>
<td></td>
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<tr>
<td>12 M ***EXAM III *** (to Gene synthesis)</td>
<td>See CD; Ch. 15 (250-260)</td>
<td></td>
</tr>
<tr>
<td>14 W Transgenic Plants: Analysis</td>
<td>Ch. 7 (115); CD</td>
<td></td>
</tr>
<tr>
<td>16 F Gene silenced - RNAi</td>
<td></td>
<td></td>
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<tr>
<td>19 M Feeding &amp; Hungry World</td>
<td>Ch.12 (195-197); Ch. 15 (246-260); THANKSGIVING BREAK</td>
<td></td>
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<tr>
<td>21 W Thanksgiving Holiday</td>
<td></td>
<td></td>
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<tr>
<td>23 F Thanksgiving Holiday</td>
<td></td>
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<tr>
<td><strong>Dec</strong></td>
<td></td>
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<tr>
<td>26 M Biomes</td>
<td>Ch. 6 (478-488)</td>
<td>Ex 13. Campus Tour and Virtual Field Trip</td>
</tr>
<tr>
<td>28 W Medicinal Plants</td>
<td>Ch. 19 (321-336)</td>
<td></td>
</tr>
<tr>
<td>Nov 30 F Psychoactive Plants</td>
<td>Ch. 20 (341-359)</td>
<td></td>
</tr>
<tr>
<td><strong>Dec</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 M Review I lecture room</td>
<td></td>
<td></td>
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<tr>
<td>5 W Reading Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 F <em><strong>FINAL EXAM</strong></em> 10 A.M.-12 P.M. FRIDAY</td>
<td></td>
<td>Dead Days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finals</td>
</tr>
</tbody>
</table>
Texas A&M University
Core Curriculum
Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Department of Biology

2. Course prefix and number: BIOL 107

3. Texas Common Course Number: 1313, 1113, 1413

4. Complete course title: Zoology

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - Communication
   - Mathematics
   - Life and Physical Sciences
   - Language, Philosophy and Culture
   - Creative Arts
   - American History
   - Government/Political Science
   - Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - Yes  ||  No

8. How frequently will the class be offered? every fall and spring semester

9. Number of class sections per semester: 8 (fall), 6 (spring)

10. Number of students per semester: 192 (fall), 168 spring

11. Historic annual enrollment for the last three years:
    - '09-10 = 292
    - '10-11 = 267
    - '11-12 = 244

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department
submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:
   IRA F. GREENBAUM  
   Course Instructor
   Director Biol Lower Division

   Approvals:
   Thomas J. McKnight
   Department Head
   College Dean/Designee

   Date 22 January 2013
   Date 2/13
   Date 2/13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at
www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Biology 107 is a survey of animal life emphasizing cell organization, genetics, evolution, diversity of invertebrates/vertebrates, anatomy/physiology, the interaction of animals with their environment and how these impact the human experience. Course includes a weekly laboratory component that implements use of the scientific method to reinforce and provide supplemental information related to lecture topics.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

The scientific method is the fundamental basis of both zoology lecture and lab. Lectures expose students to historical scientific experiments allowing them to hypothesize possible outcomes, reinterpret results, and explore alternative methodologies. Lecture exams consist of a variety of questions to assess students’ ability for critical thinking, analysis, application, and synthesis of course information. The zoology laboratory component provides a hands-on, active learning approach with scientific method based exercises that support students developing their own hypotheses, and independently generating, analyzing, and interpreting data. Experimental conclusions are critiqued, evaluated and summarized in formal written lab reports, homework assignments, quizzes and laboratory practical exams.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students interpret laboratory experimental results in conventional written lab reports and homework assignments implementing graphs, tables, figures, and text. Lab practical stations mimic visual representations of experimental setups requiring students to convey the purpose, main idea, or hypothesis of the exercise. Microscopic slide images, specimen dissections, and biological model/process observations are recorded, diagrammed, and/or illustrated weekly in a laboratory illustration notebook. Lab introductions and conclusions involve instructor/student interaction with examination and summarization of concepts through the medium of rapid fire questions.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

All laboratory exercises involve the generation and/or manipulation and subsequent analysis of numerical data. These data are presented and summarized in tabular and/or graphic form for homework, lab reports, quizzes, and practical exams. Specific lecture topics, specifically genetics and evolution, also require students to manipulate and interpret numerical data. Students’ aptitude in these practices are evaluated via computational problems on lecture exams.
Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

The majority of laboratory exercises require students to work in groups (typically of four students). In some cases, members of each group undertake separate components of the lab exercise and then interact to combine results into one synthesis. However, independent work is emphasized for final production of written results. During interactive lab summaries and lecture discussions of specific experiments, students have the opportunity to consider different explanations of data and how these might yield different points of view. During lecture, students have the opportunity to interact with classmates to solve problems presented via a classroom interactive media mechanism. Students may discuss the problem, assist others with understanding the concept, and then independently infer and submit their answers electronically.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
SPRING 2013 LECTURE SYLLABUS-BIOLOGY 107 (ZOOLOGY)

Professor: Dr. Leslie Kelso Winemiller  e-mail: lesliew@mail.bio.tamu.edu
Office: 320 Heldenfels  phone: 979-862-7484
Office Hours: Tuesdays and Thursdays (9:30-10:30 am; 2:30-3:30 pm) or by appointment

COURSE DESCRIPTION: Biology 107 (Zoology) surveys animal life with respect to cell organization, genetics, evolution, diversity, anatomy/physiology, and interaction of animals with their environment.

LEARNING OUTCOMES: Zoology is the scientific study of animals. The main objective of this course is to introduce students to the panorama of animal life by exploring the following topics:

1. Pervasive themes link even the most diverse animals.
2. An animal's structure and activity is determined by an array of cells interacting with one another and the environment.
3. Animal growth, repair, development, and reproduction are all dependent on cell division processes.
4. Animals inherit a structural and functional organization from their ancestors in the form of genes, the fundamental units of inheritance.
5. Animal diversity is dependent on genetic changes occurring within populations, evolution, which over long periods of time can lead to the formation of new species.
6. Animal diversity, as a result of evolutionary processes, is organized into a wide range of taxonomic phyla revealing a myriad of anatomical, physiological, and ecological attributes.

COURSE MATERIALS:
   ISBN: 0-07-765986-4
2. Top Hat Monocle Subscription ($20.00) - purchase at http://www.tophatmonocle.com; to be used in conjunction with a cell phone, smart phone, laptop computer, or ipod touch.
3. Refer to lab syllabus for required laboratory materials.

ATTENDANCE POLICY: Regular attendance is expected and strongly encouraged for success in the course. Attendance will be recorded using the Top Hat Monocle online system in conjunction with a cell phone, smart phone, laptop computer, or ipod touch. Students with 4 or less absences may qualify for the next higher letter grade if their course average is borderline.

The Lower Division Instruction Program does not accept the TAMU Explanatory Statement of Absence Form as adequate verification for an absence. Students who miss class and want to make up missed assignments must provide verification for the reason of absence (see Student Rules 7, http://student-rules.tamu.edu/).

Prior notification of absence is expected whenever possible (Student Rule 7.3). For an absence due to illness or injury, each student must notify the instructor within two working days of the absence. Additionally, the student must provide, within one week, written and signed evidence of consultation with a medical professional confirming that the injury or illness was serious enough to justify the absence. Submitted evidence will be verified prior to approval of any makeup.
**LECTURE EXAMS:** Lecture grades will be determined from three 100-point lecture exams and one 150-point final exam. Each 100-pt lecture exam consists of 45 multiple-choice. The final exam is cumulative and consists of 65 multiple-choice questions. Exams cover both lecture information and textbook assignments. For each exam, students are required to bring a #2 pencil and your TAMU student ID card. Only these items along with small purses (closed and fastened on the floor) are allowed at a desk. Cell phones, pagers, calculators, notebooks, backpacks, etc. are not allowed in the seating area. **Scantrons will be provided for each exam.** Students will not be admitted late to an exam after the first person has finished and left the classroom.

**EXAM SCHEDULE**

<table>
<thead>
<tr>
<th>EXAM</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (100 pts.)</td>
<td>Tuesday, February 5</td>
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<tr>
<td>II (100 pts.)</td>
<td>Tuesday, March 5</td>
</tr>
<tr>
<td>III (100 pts.)</td>
<td>Tuesday, April 9</td>
</tr>
<tr>
<td>FINAL EXAM (150 pts.)</td>
<td>Monday, May 6, 1-3 PM</td>
</tr>
</tbody>
</table>

**ZIPS:** Zoology Interactive Points (ZIPS) are **BONUS** point opportunities (short quizzes) offered to students during class using the Top Hat Monocle online system in conjunction with a cell phone, smart phone, ipod touch, or laptop computer. Bonus points are added to each student's cumulative point total at the end of the semester (before averaging). ZIP sessions are unannounced and can only be completed by students who are present in class. There are **NO** makeup opportunities for ZIPS.

**EXAM CHALLENGE:** After the exam, the key will be posted at [http://elearning.tamu.edu](http://elearning.tamu.edu). If students think there is an error or the key, they may state your objections through a challenge. Challenges are submitted to the instructor via e-mail [lesliew@mail.bio.tamu.edu](mailto:lesliew@mail.bio.tamu.edu) and should include test form, question number, and referenced evidence to support your challenge. If a student's written comments support the challenge, then the key will be revised. Note that this challenge period only lasts 24 hours from the time the exam key is posted. Final exams will not be returned or posted, and have no challenge period.

**MAKEUP EXAMS:** Will be given only in the event of an authorized university approved absence (see Attendance Policy). Upon approval of an excuse, a student must obtain a signed authorization form from the instructor and bring it to Heldenfels 315 to register for the makeup exam. **Makeup exams will consist of essay and short answer type questions.**

**MAKEUP EXAM SCHEDULE**

<table>
<thead>
<tr>
<th>EXAM</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Exam I</td>
<td>Thursday, February 21, 5:30-6:30 PM, Held 200</td>
</tr>
<tr>
<td>Exam II</td>
<td>Thursday, March 28, 5:30-6:30 PM, Held 200</td>
</tr>
<tr>
<td>Exam III</td>
<td>Thursday, April 25, 5:30-6:30 PM, Held 200</td>
</tr>
</tbody>
</table>

**COURSE WEBSITES:** Syllabi and course materials can be located at [http://elearning.tamu.edu](http://elearning.tamu.edu). The Introductory Biology Homepage at [http://www.bio.tamu.edu/fibi](http://www.bio.tamu.edu/fibi) contains general course and contact information. The textbook website is located at [http://www.mhhe.com/maderbiology11](http://www.mhhe.com/maderbiology11).
COURSE GRADE:

Lecture composes 70% of the final course grade, and lab composes 30% of the final grade. Lecture grade is determined by 3 regular exams (100 pts. each = 300 pts); bonus points; 1 final exam (150 pts.)

$\text{(Lecture Grade } \times 0.7) + \text{ (Laboratory Grade } \times 0.3) = \text{ Final Course Grade}$

$3 \text{ Regular Exams + Final Exam + Bonus Points}$

$\frac{450}{100} = \text{ Lecture Grade}$

$\text{Total Lab Points (Exams, Homework, Quizzes, Lab Report, Lab Notebook)}$

$\frac{500}{100} = \text{ Lab Grade}$

COURSE SCHEDULE

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>Biology 107; 11th edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>Ch.1; 1-19</td>
</tr>
<tr>
<td>A View of Life</td>
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<tr>
<td>CELLS &amp; INHERITANCE</td>
<td>Ch. 4; 60-84</td>
</tr>
<tr>
<td>Cell Structure and Function</td>
<td>Ch. 5; 85-103</td>
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<tr>
<td>Membrane Structure and Function</td>
<td>Ch. 9; 153-170</td>
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<tr>
<td>The Cell Cycle and Cellular Reproduction</td>
<td>Ch. 10; 171-191</td>
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<tr>
<td>Meiosis and Sexual Reproduction</td>
<td>Ch. 11; 192-213; Ch. 32; 619</td>
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<tr>
<td>Mendelian Patterns of Inheritance</td>
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<tr>
<td>EVOLUTION</td>
<td>Ch. 15; 271-288</td>
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<tr>
<td>Darwin and Evolution</td>
<td>Ch. 16; 289-305</td>
</tr>
<tr>
<td>How Populations Evolve</td>
<td>Ch. 17; 306-326</td>
</tr>
<tr>
<td>Speciation and Macroevolution</td>
<td>Ch. 19; 347-361</td>
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<tr>
<td>Systematics and Phylogeny</td>
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<tr>
<td>ANIMALIA/FORM &amp; FUNCTION</td>
<td>Ch. 28; 519-548; 606-607; 664-665; 666-657; 681-682; 694; 720; 736-737; 773</td>
</tr>
<tr>
<td>Invertebrate Evolution</td>
<td>Ch. 29; 549-569; 695-696; 774</td>
</tr>
<tr>
<td>Vertebrate Evolution</td>
<td>pp. 597, 608-609, 666, 668, 755-757; 681-683, 681-684</td>
</tr>
<tr>
<td>The Fishes Form &amp; Function</td>
<td>pp. 597, 608-609, 669-670, 681</td>
</tr>
<tr>
<td>Amphibians Form &amp; Function</td>
<td>pp. 597, 608-609, 669-670, 681-684</td>
</tr>
<tr>
<td>Reptiles Form &amp; Function</td>
<td>pp. 597, 608-609, 670, 757, 681-68</td>
</tr>
</tbody>
</table>
GENERAL INFORMATION:

**Lower Division Biology Instruction Office:** Information is available online at [http://www.bio.tamu.edu/ldi](http://www.bio.tamu.edu/ldi) or in Heldenfels 315 (Monday - Friday, 8 am - 5 pm, phone 845-4651, e-mail introbio@mail.bio.tamu.edu).

**Grade Checks:** Submit grade check requests at [http://www.bio.tamu.edu/ldi](http://www.bio.tamu.edu/ldi). Students will be notified by e-mail when the results are ready and must bring a student ID to Heldenfels 315 to pick up the grade check.

**Grade Release:** Family Educational Rights and Privacy Act of 1974 (FERPA) prohibits faculty or staff from posting grades by phone or e-mail. Grades will be online via Vista/Blackboard. To access this site: Logon to [http://clearning.tamu.edu](http://clearning.tamu.edu), select TAMU LOGON, logon with NetID and password, select Biology 107.

**Q-Drop:** Tuesday, April 2 (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If students have any question as to whether or not to Q-drop, they should talk to their instructor before this date. After this date, students will be assigned a letter grade or must negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student Rule 10.3).

**Academic Integrity:** "An Aggie does not lie, cheat, steal, or tolerate those that do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office at [http://www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor).

**Disability Statement:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities. Students who have a disability requiring an accommodation should contact the Disability Services in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Copyright Statement:** The handouts used in this course are copyrighted. "Handouts" are all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, power point slides, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, students do not have the right to copy the handouts, unless the instructor expressly grants permission.

**Copyright 2013 (Leslie K. Winemiller)** as to this syllabus and all lectures. Students are prohibited from selling (or being paid for taking) notes during this course or by any person or commercial firm without the express written permission of the professor teaching this course. Students are also prohibited from posting notes on the internet without the express written permission of the professor teaching this course.
SPRING 2013 - BIOLOGY 107 LAB SYLLABUS

SECTION: ___________________________  DAY: ___________________________  TIME: ___________________________

LAB INSTRUCTOR: ___________________________  OFFICE: ___________________________

PHONE: ___________________________  E-MAIL: ___________________________

COURSE OBJECTIVES: Biology 107 lab serves to reinforce and supplement information presented during lecture. Information either will be presented first in lab and then reviewed during lecture or vice versa. To enhance the laboratory experience, students should review their syllabus and read each laboratory exercise prior to the weekly lab meeting. Each laboratory exercise in the manual contains a list of objectives and review questions. Students should use these objectives and questions to review information for quizzes and/or lab exams.

ATTENDANCE POLICY: Laboratory attendance is extremely important! NO makeup opportunities will be provided for missed material, quizzes, or exams unless the student notifies the lab instructor of the absence within 2 working days and provides an authorized university excuse within a week of the absence. Zeros will be recorded for any missed material without such an excuse. See attendance policy on lecture syllabus for more information.

LABORATORY MATERIALS:
3. Dissection Kit - Purchase at bookstores.
4. Safety goggles - Purchase at bookstores.
5. Blue Marble Composition Notebook (Blank Pages) - Purchase at bookstores
6. Colored Pencils

NOTE: *NO FOOD, DRINK, or ELECTRONICS (cell phones, pagers, etc.) allowed in the laboratory.*
*Goggles and close-toed shoes are required for lab entry!*

<table>
<thead>
<tr>
<th>LAB GRADE:</th>
<th>Your total points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Lab Grade:</td>
<td>500 x 100 = ___%</td>
</tr>
</tbody>
</table>

Lab composes 30% of total course grade.

<table>
<thead>
<tr>
<th>Quiz Grades (80 pts.)</th>
<th>Assignments (200 pts. total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (8 pts.)</td>
<td>1. Scientific Method Assignment (10 pts.)</td>
</tr>
<tr>
<td>2. (8 pts.)</td>
<td>2. Genetics Problems (10 pts.)</td>
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<tr>
<td>3. (8 pts.)</td>
<td>3. Hardy-Weinberg Problems (10 pts.)</td>
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<td>4. (8 pts.)</td>
<td>4. Natural Selection Lab Report (50 pts.)</td>
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<td>5. (8 pts.)</td>
<td>5. Table I: Invertebrate Animal Phylogeny (10 pts.)</td>
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<td>6. Table II: Vertebrate Animal Phylogeny (10 pts.)</td>
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<td>8. Urinalysis Diagnosis (10 pts.)</td>
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<td>Practical Exams (200 pts.)</td>
<td>11. Digestion Assignment (10 pts.)</td>
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<td>Practical Exam I (100 pts.)</td>
<td>12. EEG Analysis (10 pts.)</td>
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<td>Practical Exam II (100 pts.)</td>
<td>Participation Points (20 pts.)</td>
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<td>Total Points (of 500)</td>
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RE-GRADING: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment, so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

MAKEUPS: Lab makeup assignments are restricted to students with approved absences (see Student rule 7) and must be scheduled by the student within two weeks of the end of the absence. Rule 7.1.6.3 "An absence for a non acute medical service does not constitute an excused absence". A non-acute medical excuse will not be accepted as a valid reason to miss an exam.

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1. Title and Lab Number
2. Labels (required labels are in parentheses next to each illustration title)
3. Magnification power (if applicable)
4. Phyllum and Class names (if applicable)

Lab 2 (3 Illustrations): Cheek Epithelial Cells (nucleus, cytoplasm, plasma membrane); Euglena (nucleus, flagellum, pellicle); Pond Water (label organisms in sample)

Lab 3 (4 Illustrations): Anabaena; Human Kidney Cuboidal Cells (nucleus, plasma membrane, cytoplasm); Elodea (hypotonic solution and hypertonic solution—label central vacuole, nucleus, plasma membrane)

Lab 4 (8 Illustrations): Whitefish Blastula Cells Mitotic phases, interphase, prophase, metaphase, anaphase, and telophase (label chromosome, aster, spindle, cleavage furrow, plasma membrane, and cellular envelope in each phase if present); Mammalian Ovary (primary follicle, secondary follicle, egg, vesicular follicle); Mammalian Testes (spermatogonia, spermatozoa, interstitial cell); Bull Sperm (flagellum, plasma membrane)

Lab 5 & 6 (3 Illustrations): Meiosis Simulation on p. 56 (products of segregation involving A and a); Meiosis Simulation on pp. 57-59 (show 2 arrangements at metaphase I and II, anaphase I and II, telophase I and II involving independent assortment of A/a and B/b); Barr Body (Barr body, nucleus, cell membrane)

Lab 7 (3 Illustrations): side by side comparison of frog, chick, and pig embryos (pharyngeal pouch, tail, eye, somite)

Lab 9 (10 Illustrations): Sponge (asci, pore); Spicule; Hydra (mouth, tentacle, bud, epidermis, notochord, polyp); Obelia (mouth, tentacle, medusa); Planaria (eyespot, mantle, pharynx, gastrovascular cavity); Tapeworm (scolex, larvae); Chinese Liver Fluke (oral sucker, ventral sucker, reproductive organs); Human Blood Fluke (male, female); Ascaris male and female (mouth, cuticle, anterior end, posterior end); Trichinella (cyst, host muscle); Rotifer (corona, mouth, foot)

Lab 10 (7 Illustrations): Clam (umbo, hinge ligament, gills, foot, and excurrent siphons, mantle, adductor muscle, visceral mass); Squid (arm, fin, gills, tentacle, mantle, funnel, eye); Earthworm (mouth, anus, setae, segment, clitellum, septum, pharynx, crop, gizzard, intestine); Earthworm Cross section (coelom, cuticle, longitudinal muscle, circular muscle, intestine, setae, ventral blood vessel, ventral nerve cord); Crayfish (antenna, claw, walking leg, swimmeret, abdomen, gills, compound eye, carapace, uropod, telson); Grasshopper (head, thorax, abdomen, antenna, compound eye, tympanum, spiracle, leg, forewing, hindwing); Sea star (arm, anus, mouth, spine, tube feet, digestive gland, gonad, central disk, cirrus plate)

Lab 11 (3 Illustrations): Lancelet (oral hood, gill slit, notochord, dorsal hollow nerve cord, postanal tail, anus); Lancelet Cross section (nerve cord, notochord, pharynx, gill slit, muscle); Frog (heart, bony, lung, liver, gallbladder, stomach, ovary/testes, small intestine, large intestine, fat body, kidney, bladder)
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 Lab 2: Microscopy                                                               |                                                                                     |
| *Jan. 21-25       | Lab 3: Cell Structure and Function                                        | Scientific Method Assignment Due                                                   |
| Jan. 28-Feb. 1    | Lab 4: Mitosis and Meiosis                                               | Quiz #1                                                                             |
| Feb. 4--8         | Lab 5: Mendelian Genetics  
 Lab 6: Human Genetics                                                         | Quiz #2                                                                             |
| *Feb. 11-15       | Lab 7: Evidences for Evolution                                           | Quiz #3                                                                             |
| Feb. 18-22        | Lab 8: Natural Selection  
 Natural Selection Experiment                                                   | Quiz #4  
 Genetics Problems Due                                                       |
| Feb. 25-March 1   | **Practical Exam I**                                                      |                                                                                     |
| +*March 4-8       | Lab 9: Introduction to Invertebrates                                    | Quiz #5  
 Hardy-Weinberg Problems Due  
 Natural Selection Lab Report Due                                      |
| March 11-15       | **Spring Break**  
 Labs will not meet this week                                             |                                                                                     |
| +*March 18-22     | Lab 10: Invertebrate Coelomates                                          | Quiz #6  
 Table I-Animal Phyla Assignment Due                                           |
| +*March 25-29     | Lab 11: The Vertebrates  
 Lab 12: Basic Mammalian Anatomy I  
 Spirometer Exercise/Gills  
 Urinalysis Exercise                                             | Quiz #7  
 Table II-Animal Phyla Assignment Due                                       |
| +*Apr. 1-5        | Lab 13: Basic Mammalian Anatomy II  
 Cardiophysiology Exercise                                                   | Quiz #8  
 Table III-Animal Phyla Assignment Due  
 Urinalysis Diagnosis Assignment Due  
 Lab Illustration Notebook Due                                              |
| +*Apr. 8-12       | Lab 14: Chemical Aspects of Digestion                                    | Quiz #9  
 Cardiophysiology Assignment Due                                                 |
| +*Apr. 15-19      | Lab 15: Nervous System and Senses  
 EEG Exercise                                                              | Quiz #10  
 Digestion Assignment Due                                                       |
| Apr. 22-26        | **Practical Exam II**                                                    | EEG Analysis Assignment Due                                                       |

*Goggles Required For Class  
 +Dissection Kit Required For Class
Zoology Lab

SPRING 2013 - BIOLOGY 107 LAB SYLLABUS

SECTION: ____________________  DAY: ____________________  TIME: ____________________

LAB INSTRUCTOR: ____________________  OFFICE: ____________________

PHONE: ____________________  E-MAIL: ____________________

COURSE OBJECTIVES: Biology 107 lab serves to reinforce and supplement information presented during lecture. Information either will be presented first in lab and then reviewed during lecture or vice versa. To enhance the laboratory experience, students should review their syllabus and read each laboratory exercise prior to the weekly lab meeting. Each laboratory exercise in the manual contains a list of objectives and review questions. Students should use these objectives and questions to review information for quizzes and/or lab exams.

ATTENDANCE POLICY: Laboratory attendance is extremely important! NO makeup opportunities will be provided for missed material, quizzes, or exams unless the student notifies the lab instructor of the absence within 2 working days and provides an authorized university excuse within a week of the absence. Zeros will be recorded for any missed material without such an excuse. See attendance policy on lecture syllabus for more information.

LABORATORY MATERIALS:
   (ISBN: 0-07-7659848)
2. Dissection Kit - Purchase at bookstores.
3. Safety goggles - Purchase at bookstores.
4. Blue Marble Composition Notebook (Blank Pages) – Purchase at bookstores
5. Colored Pencils

NOTE: • NO FOOD, DRINK, or ELECTRONICS (cell phones, pagers, etc.) allowed in the laboratory.
   • Goggles and close-toed shoes are required for lab entry!

LAB GRADE:

Your total points

Final Lab Grade: $\frac{500}{100} = ____\%$

Lab composes 30% of total course grade.

Quiz Grades (80 pts.)
1. (8 pts.) ____________________
2. (8 pts.) ____________________
3. (6 pts.) ____________________
4. (8 pts.) ____________________
5. (8 pts.) ____________________
6. (8 pts.) ____________________
7. (8 pts.) ____________________
8. (8 pts.) ____________________
9. (8 pts.) ____________________
10. (8 pts.) ____________________

Practical Exams (200 pts.)
Practical Exam I (100 pts.) ____________________
Practical Exam II (100 pts.) ____________________
Total Points (of 500) ____________________

Assignments (200 pts. total)
1. Scientific Method Assignment (10 pts.) ____________________
2. Genetics Problems (10 pts.) ____________________
3. Hardy-Weinberg Problems (10 pts.) ____________________
4. Natural Selection Lab Report (50 pts.) ____________________
5. Table I: Invertebrate Animal Phyla (10 pts.) ____________________
6. Table II: Invertebrate Animal Phyla (10 pts.) ____________________
7. Table III: Vertebrate Animal Phyla (10 pts.) ____________________
8. Urinalysis Diagnosis (10 pts.) ____________________
9. Illustration Notebook (30 pts.) ____________________
10. Cardiophysiology Assignment (10 pts.) ____________________
11. Digestion Assignment (10 pts.) ____________________
12. EEG Analysis (10 pts.) ____________________

Participation Points (20 pts.) ____________________
QUIZZES: There will be ten 8-point quizzes, which may be a combination of short answer, essay, and/or objective review questions. Refer to practice and review questions in zoology lab manual to assist with studying for quizzes.

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(3) Magnification power (if applicable)
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Lab 5 & 6 (3 illustrations): Meiosis Simulation on p. 66 (products of segregation involving A and a); Meiosis Simulation on pp. 67-69 (show 2 arrangements at metaphase I and II, anaphase I and II, telophase I and II involving independent assortment of A/a and B/b); Barr Body (Barr body, nucleus, cell membrane)

Lab 7 (3 illustrations): Side by side comparison of frog, chick, and pig embryos (pharyngeal pouch, tail, eye, somite)

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Lab 11 (3 illustrations): Lancelet (oral hood, gill slit, notochord, dorsal hollow nerve cord, postanal tail, anus); Lancelet cross section (neural tube, notochord, pharynx, gill slit, muscle); Frog (heart, larynx, lung, liver, gallbladder, stomach, ovary/testis, small intestine, large intestine, fat body, kidney, bladder)
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*Goggles Required For Class
+Dissection Kit Required For Class
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Department of Biology

2. Course prefix and number: BIOL 111

3. Texas Common Course Number: 1306, 1106, 1406

4. Complete course title: Introductory Biology I

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [X] Life and Physical Sciences
   - [ ] Language, Philosophy and Culture
   - [ ] Creative Arts
   - [ ] American History
   - [ ] Government/Political Science
   - [ ] Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - [ ] Yes
   - [X] No

8. How frequently will the course be offered? every fall and spring semester

9. Number of class sections per semester: 79 (fall), 32 (spring)

10. Number of students per semester: 1896 (fall), 786 (spring)

11. Historic annual enrollment for the last three years: '09-10 = 2484 '10-11 = 2496 '11-12 = 2368

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:
   
   Ira F. Greenbaum
   
   Course Instructor/DIR UIER BIOL LOWER DIVISION
   
   Approvals:
   
   [Signature]
   
   Department Head
   
   [Signature]
   
   College Dean/Designee
   
   Date: 2/5/13
   
   [Signature]
   
   Date: 2/8/13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Biology 111 is the first half of an introductory two-semester survey of contemporary biology that covers the chemical basis of life, structure and biology of the cell, molecular biology and genetics including the role of biotechnology in molecular genetics. Course includes a weekly laboratory that emphasizes the scientific method to reinforce and provide supplemental information related to the lecture topics.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

The scientific method is the fundamental basis of both lecture and lab. Lectures discuss knowledge obtained from interpreting results of historical scientific experiments and allow students to explore the implications of alternative outcomes. Lecture exams include questions to assess students’ ability for critical thinking and analysis and their capacity for synthesizing information presented at different times during the course. The laboratory component of the course include hands-on practice and evaluation of exercises based on the scientific method including the indentification of specific hypotheses, analysis of data from in-lab exercises, interpretation of results, formulation of exercise related questions, weekly quizzes, and written homeworks and lab reports.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Homework assignments and lab reports require written interpretation of the results of the laboratory exercises. Labs conclude with an instructor/student interactive summary during which students orally respond to and ask questions. Both lecture and lab utilize visual communication through interpretation of data presented in graphs, tables, and figures.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

All lab exercises involve the generation and/or manipulation and analysis of of exercise-specific numerical data. As described above, these are then summarized in tabular and/or graphic form for homeworks, lab reports, quizzes and practical exams. Certain lecture topics, particularly in biological chemistry and genetics, also require students to manipulate and interpret numerical data. Students’ facility in these areas are specifically evaluated on lecture exams.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):
Most laboratory exercises require the students to work in groups (typically groups of four). In some cases groups perform separate components of the lab exercise and then interact to combine the results into one synthesis. In almost all cases however the students must individually produce their own written results. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Biology 111, Introductory Biology I
Lecture/Lab Syllabus, Fall 2012
Sections 501-513
TR 9:35-10:50, HELD 200

Lecture Professor:  Dr. Thomas McKnight  E-mail:  mcknight@mail.bio.tamu.edu
Office:  Butler 101  B  Phone:  845-3896  Office Hours:  after class or by appointment

Course Description:  Biology 111 is the first half of an introductory two-semester survey of contemporary biology that covers the chemical basis of life, structure and biology of the cell, molecular biology and genetics. Course includes laboratory that reinforces and provides supplemental information related to the lecture topics. Biology 111 is the first course in a rigorous two-course series for life science majors and other students intending to pursue a career in biomedical sciences. It is not designed as a course for students who just need to fulfill the science course requirement in the core curriculum. BIOL 101, BIOL 107, and BIOL 113 may be more suitable for non-science majors. If you have any question about which biology course you should take, please see your academic advisor.

Course Objectives:  Biology 111 is a 4-credit hour course that consists of 150 minutes of lecture and 170 minutes of lab each week. Students are expected to attend both lecture and lab where they will be introduced to the fundamentals of biological structure and function. Upon completion of Biology 111 students should be able to demonstrate a basic grasp of the major themes of Biology including the importance of water, carbon, and macromolecules to life on Earth. Students should be able to discuss basic cell structure and describe significant processes that occur in the cell such as membrane function, cellular respiration, photosynthesis, communication and cell division. Finally the successful student will be able to demonstrate an understanding of the processes and relationships of genetics, inheritance, protein synthesis, the regulation of gene expression, and the role of biotechnology in molecular genetics, the study of viruses, and the evolution of genomes.

Texts/Materials:  Texts are on reserve in the Evan’s library annex, 4th floor.

•  Campbell Biology (9th edition) by Reece et al. - required.
•  Biology 111 Laboratory Manual 7th ed. (2012) by Tonna Harris-Haller - required
•  Campbell Biology Website - recommended. Subscription is included with a new text, or may be purchased online at http://masteringbiology.com.

General Information:

Lower Division Biology Instruction Office:  Administrative questions pertaining to Biology 111 may be referred to 315 Heldenfels (HELD), Mon. through Fri. 8 am to 5 pm, 845-4651, e-mail: introbio.tamu.edu

Webpage:  The Lower Division Instruction webpage at http://www.bio.tamu.edu/ldi/ has contact information for faculty, teaching assistants and staff, as well as exam challenge forms and scantron grade check request forms.

Vista/Blackboard:  Grade information and materials posted by faculty may be located on the course VISTA/BLACKBOARD site. To access VISTA/BLACKBOARD:
Logon to http://elearning.tamu.edu/
Choose the TAMU (Net ID) logon option
Logon with your Net ID and password
Choose the Biol 111 course list link
Release of Grades: The Family Educational Rights and Privacy Act (FERPA) prohibits faculty and staff from posting grades to unsecured websites, or reporting grades by e-mail or telephone. Individual grade information is available via VISTA/BLACKBOARD.

Absence Policy: The Lower Division Program does not accept the Texas A&M University Explanatory Statement of Absence Form as an adequate verification for an absence. Students who miss class and want to make up one or more missed assignments must provide verification for the reason of the absence (see Student Rules 7, Attendance http://student-rules.tamu.edu/rule07). Prior notification of absence is expected whenever possible (Student rule 7.3).

For an absence due to illness or injury, you must notify your instructor within two working days of the absence. Additionally, you must provide, within one week, written and signed evidence of consultation with a medical professional confirming that the injury or illness was serious enough to justify the absence. Submitted evidence will be verified prior to approval of any makeup.

Make up Exams: Will be given only in the event of an authorized university approved absence (see Absence Policy). The exam may be essay and will be given only with the permission of the instructor. Obtain a signed authorization form from your instructor and bring it to 315 HELD to register for a make up test. You may not take a make up to improve a test score.

Scantron Grade Checks: If you think that your posted exam grade is incorrect, you may have your scantron rechecked. Submit grade check requests at http://www.bio.tamu.edu/ld/. You will be notified via e-mail when the results are ready. Bring your student I.D. to 315 HELD to pickup your grade check.

Course Grade: Designation of letter grades should be expected to be determined as follows:

A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F ≤ 59%

Some downward adjustment of letter grade cutoffs (i.e. curve) may be applied dependent on the class numerical grade distribution and the instructor's judgment. Final lab totals may be subject to statistical normalization. Grades are awarded only on the basis of your performance in the class.

The course percentage is 75% lecture and 25% laboratory. Calculate your course percentage as follows:

Lecture Percentage = total lecture points/450 × 100

Lab Percentage = total lab points/450 × 100

Course Percentage = (Lecture Percentage × 0.75) + (Laboratory Percentage × 0.25)

Q-Drop: Friday, November 2nd (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If you have any question as to whether or not to Q-drop, see your instructor before this date. After this date you must take a letter grade or negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student rule 10.3).

Academic Integrity: An Aggie does not lie, cheat or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU Community from the requirements or the processes of the Honor System.

Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple/duplicate submissions, plagiarism and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office

http://aggiehonor.tamu.edu/.
Copyright: The materials used in this course are copyrighted. This includes, but is not limited to syllabi, lecture notes, quizzes, exams, lab problems, in-class materials, review sheets and problem sets. You do not have the right to copy or provide course materials to others without the permission of the instructor.

Americans with Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall, room B118 or call 845-1637 (website http://disability.tamu.edu/).

Lecture Information:

Lecture Exams: There will be three 100 point lecture exams and one 150 point final exam. Each lecture exam will have 40 multiple-choice questions worth 2.5 points each. The final exam is cumulative and will have 60 multiple-choice questions worth 2.5 points each (for a total of 150 points). Exams cover both lecture material and text assignments. For each exam, you are required to bring a #2 pencil and your TAMU Student I.D. Failure to provide positive identification will result in a score of zero for the exam. Your instructor may permit a non-programmable calculator for specified exams. A purse may be carried to your desk but must be closed and left on the floor. No other items will be permitted at your desk.

<table>
<thead>
<tr>
<th>Lecture Exam</th>
<th>Date</th>
<th>Exam Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Exam 1 (100 points)</td>
<td>Thurs., Sept. 20</td>
<td>9:35-10:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 2 (100 points)</td>
<td>Tues., Oct. 16</td>
<td>9:35-10:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 3 (100 points)</td>
<td>Tues., Nov. 13</td>
<td>9:35-10:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Final Exam (150 points)</td>
<td>Fri., Dec. 7</td>
<td>12:30-2:30</td>
<td>HELD 200</td>
</tr>
</tbody>
</table>

Exam Challenges: After each lecture exam, a copy of the key will be posted on VISTA/BLACKBOARD. If you think there is an error in the key, submit an Exam Challenge Form at: http://www.bio.tamu.edu/ldi/ within 24 hours. Give referenced support as to why an alternative answer choice should be accepted.

Note: Final exams will not be returned or posted, and have no challenge period.

Rescheduling Exams: Lecture exams must be taken with your registered section. A grade of ZERO will be given for any exam taken out-of-section. A final exam may be rescheduled provided you show proof of three or more final exams scheduled for the same day. Make arrangements for an alternate final exam time in 315 HELD during the last week of class.

Make up Exam Schedule: See Make up Exams (previous Page)
# BIOLOGY 111 LECTURE SCHEDULE

<table>
<thead>
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<th>TOPIC</th>
<th>CHAPTER</th>
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<tr>
<td>Introduction: Themes in the Study of Life</td>
<td>Ch. 1</td>
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<tr>
<td>THE CHEMISTRY OF LIFE</td>
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<tr>
<td>The Chemical Context of Life</td>
<td>Ch. 2</td>
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<tr>
<td>Water and Life</td>
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<td>Carbon and Molecular Diversity of Life</td>
<td>Ch. 4</td>
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<tr>
<td>The Structure and Function of Large Biological Molecules</td>
<td>Ch. 5</td>
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<td>THE CELL</td>
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<tr>
<td>A Tour of the Cell</td>
<td>Ch. 6</td>
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<tr>
<td>Membrane Structure &amp; Function</td>
<td>Ch. 7</td>
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<tr>
<td>An Introduction to Metabolism</td>
<td>Ch. 8</td>
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<tr>
<td>Cellular Respiration and Fermentation</td>
<td>Ch. 9</td>
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<tr>
<td>Photosynthesis</td>
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<td>Cell Communication</td>
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<td>The Cell Cycle</td>
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<td>GENETICS</td>
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<td>Meiosis and Sexual Life Cycles</td>
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<tr>
<td>Mendel and the Gene Idea</td>
<td>Ch. 14</td>
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<tr>
<td>The Chromosomal Basis of Inheritance</td>
<td>Ch. 15</td>
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<tr>
<td>The Molecular Basis of Inheritance</td>
<td>Ch. 16</td>
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<tr>
<td>From Gene to Protein</td>
<td>Ch. 17</td>
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<tr>
<td>Regulation of Gene Expression</td>
<td>Ch. 18</td>
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<tr>
<td>Viruses</td>
<td>Ch. 19</td>
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<tr>
<td>Biotechnology</td>
<td>Ch. 20</td>
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<tr>
<td>Genomes and their Evolution</td>
<td>Ch. 21</td>
</tr>
</tbody>
</table>
Lab Information:

Lab Instructor: ___________________ E-mail: ___________________

Section: ________ Office: HELED 317 E Office Hours: ________ Phone: 845-4653

Lab Safety:

- You will be required to sign a Safety Agreement indicating that you have read, understood, and agree to follow the safety regulations required for this course.
  - A. Logon to the Howdy Portal, select My record
  - B. Find the registration box link to LSA (lab safety acknowledgement)
  - C. Read the LSA and then agree to it

- Eating, drinking, and use of tobacco products are prohibited in the laboratory.

- University safety regulations require closed-toe shoes in the laboratory. You will be refused admittance to the lab if you wear sandals or open-toed shoes.

- Safety goggles are required. Bring safety goggles to all labs.

Lab Exams: There will be two 100 point practical exams. Each practical exam will have 25 stations with 1 to 4 questions per station for a total of 100 points per exam. The second practical exam is not comprehensive.

Quizzes: There will be nine 15-point quizzes. These may be a combination of written and practical questions.

Assignments: There will be 8 homework assignments worth a total of 90 points. Two points are automatically deducted for late assignments, and an additional point is deducted for each additional day overdue. Late homework may be logged in at HELED 317 E. Should HELED 317 E be closed, late homework may be logged in at HELED 315.

Participation Points: Each TA will award a maximum of 25 points based upon cooperation, class participation, adherence to safety procedures, attendance, and cleanup.

Bonus Points: There are no bonus point opportunities in lab!

Regrading: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment, so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

Lab Rescheduling: A verifiable university approved excuse is required before a student may be rescheduled into another lab section during the same week, if space permits. To reschedule a missed lab during the same week lab is missed, bring written verifiable evidence of a university excused absence to 315 HELED as early as possible. There will be NO make up labs. If you miss a lab for a university approved reason and cannot be rescheduled, then you must contact your lab instructor within two working days after the lab to make arrangements for a make up quiz or assignment. Failing to contact your instructor in a timely manner will result in a zero for the missed assignment.

Makeups: Lab makeup assignments are restricted to students with approved absences (see Student rule 7) and must be scheduled by the student within two weeks of the end of the absence. Note: Rule 7.1.6.3 “An absence for a non acute medical service does not constitute an excused absence”. A non acute medical excuse will not be accepted as a valid reason to miss a practical exam.
Laboratory Assignments:

Work individually: All laboratory assignments are individual projects. You may not work together on written assignments without the permission of your lab instructor.

Plagiarism and Proper Citation: Copying from texts, lab manuals, internet sources, or other students without proper credit is plagiarism and will be considered cheating. If you quote from another source, you must credit that source in your text and properly cite the reference in a literature cited section. The following is an example of a proper citation:


Assignment 1 - Termite Behavior (5 pts). Present a short, in-class presentation of the termite behavior experiment with special reference to how the experiment followed the scientific method.

Assignment 2 — Properties of water (15 pts). Follow the instructions on page 33 for the report on the starch/ amylase experiment. Submit the text via Turn-it-in.com print the receipt and attach the originality report to your paper when you submit to your instructor.

Assignment 3 – Enzymes graphs (15 pts). Work independently! Graph the data for the four parameters that affect enzyme activity. Properly label and title each graph. Follow the guidelines on page 69 and, write a short abstract summary for all the test experiments. Submit the text to Turn-it-in.com and print the receipt and submit the graphs, and written description to your lab instructor.

Assignment 4 – Cells in-class summary questions (5 pts). Write a practical exam question for each lab objective. Practical questions require A setup as part of the question. The setup must be from the lab exercise (equipment, specimens, slides, diagrams, graphs, models, text illustrations etc.). Avoid written multiple choice options, yes/no, male/female, true/false, or either/or answers.

For each question include:  
  Your name:  
  Setup  
  Question  
  Answer  
  Objective  

Example  
  Student X  
  3 slides A- Bacteria, B- Cyanobacteria, C- green algae  
  Which represents an organism most likely formed via one or more endosymbiotic events?  
  C- green algae  
  Differentiate between prokaryotic and eukaryotic cells.

Assignment 5 – Cellular Metabolism (5 pts). Work individually! Complete Table 6-2 on page 100 and answer all questions on page 101. Properly label Table 6-2. Turn in the assignment to your instructor before you leave class.

Assignment 6- Photosynthesis (15 pts). Work Independently! See page 123 for instructions. Write an abstract and graph the results of the absorption and action spectra measurements. Attach data Tables 7-3, 7-4, and 7-6. Label and title each graph. Note: an abstract is a short, one or two paragraph summary statement of the experiment and its results. Be sure to include a statement of the hypothesis and whether the results supported or refuted the hypothesis. Submit the text via Turn-it-in.com and print the receipt. Attach the receipt to your graphs and abstract and turn in the assignment to your instructor.

Assignment 7 – Forensic Biology (25 pts). Work individually! Follow the guidelines in Appendix B (p. 237) to write a scientific lab report over the forensic investigation done in this lab. Attach appropriate data tables, graphs, and photographs. Label and title all tables and graphs. Describe how variables were controlled. Describe the results and discuss whether the evidence exonerates or focuses attention on one of the suspects. Attach the cover sheet from Appendix B for grading. Submit the text via Turn-it-in.com, print the receipt, and attach it to your report when you submit it.

Assignment 8-Flowchart (5pts). At the beginning of class submit a flowchart outlining the steps to be taken from DNA extractions through PCR.
**Student Support:**

**Help desk:** Students needing individual assistance will find a Teaching Assistant in 317 E HELD. Check the schedule posted outside of 317 E HELD – phone 845-4653.

**Biology Image Library:** Images of lab slides and specimens are available online via the TAMU Biology Images Library at [http://biologyimages.tamu.edu/](http://biologyimages.tamu.edu/). Images are taken offline prior to the beginning of each practical exam week.

1st Exam Review: Username: Biology 111    Password: Biology 111    Goes offline: M, Oct. 8, 7:45 a.m.
2nd Exam Review: Username: Biology 111-2nd Password: Biology 111    Goes offline: M, Nov. 26, 7:45 a.m.

**Problems:** Courtesy dictates that you first discuss any problem with your laboratory instructor. If the problem has not been resolved, please contact Mr. Chris Lee (Teaching Coordinator) at 458-3399 (or by e-mail at clee@mail.bio.tamu.edu) to make an appointment to discuss the situation.
BIOLOGY 111 LABORATORY SCHEDULE  
Fall 2012

<table>
<thead>
<tr>
<th>LAB MANUAL CHAPTER</th>
<th>DATES</th>
<th>ASSIGNMENT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 1 - The Discovery Process</td>
<td>Aug. 27-30</td>
<td>Assignment 1 (in-class)</td>
</tr>
<tr>
<td>Ch. 2 - The Properties of Water, Quiz 1</td>
<td>Sept. 3-6</td>
<td>Assignment 2 – submit text turn-it-in.com</td>
</tr>
<tr>
<td>Ch. 3 - Biomolecules, Quiz 2</td>
<td>Sept. 10-13</td>
<td></td>
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<tr>
<td>Ch. 4 - Enzymes - Protein Catalysts, Quiz 3</td>
<td>Sept. 17-20</td>
<td>Assignment 3 – submit text to turn-it-in.com</td>
</tr>
<tr>
<td>Ch. 5 - Cells - The Basic Unit of Life, Quiz 4</td>
<td>Sept. 24-27</td>
<td>Assignment 4 - (in-class)</td>
</tr>
<tr>
<td>Ch. 6 – Cellular Metabolism , Quiz 5</td>
<td>Oct. 1-4</td>
<td>Assignment 5 - (in class)</td>
</tr>
<tr>
<td><strong>LAB PRACTICAL EXAM 1</strong></td>
<td>Oct. 8-11</td>
<td></td>
</tr>
<tr>
<td>Ch. 7 – Photosynthesis</td>
<td>Oct. 15-18</td>
<td></td>
</tr>
<tr>
<td>Ch. 8 – Cell Division, Quiz 6</td>
<td>Oct. 22-25</td>
<td>Assignment 6 - submit text turn-it-in.com</td>
</tr>
<tr>
<td>Ch. 9 – Theory of Heredity, Quiz 7</td>
<td>Oct. 29- Nov. 1</td>
<td></td>
</tr>
<tr>
<td>Ch. 10 – Forensic Biology, Quiz 8</td>
<td>Nov. 5-8</td>
<td>Assignment 7 – Submit turn-it-in.com</td>
</tr>
<tr>
<td>Ch. 11 – PCR and DNA Typing and, Quiz 9</td>
<td>Nov. 12-15</td>
<td>Assignment 8 (in-class)</td>
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<tr>
<td>Ch. 12 - Protein Synthesis</td>
<td></td>
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<tr>
<td>Thanksgiving</td>
<td>Nov. 19-22</td>
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<tr>
<td><strong>LAB PRACTICAL EXAM 2</strong></td>
<td>Nov. 26 -29</td>
<td></td>
</tr>
</tbody>
</table>

*Goggles are required every week.  
*Open-toed shoes are prohibited in lab. Must wear close-toe shoes.

Lab Practical Make up Exam Schedule
Lab Make up Exam 1 TBA  
Lab Make up Exam 2 TBA
Texas A&M University  
Core Curriculum  
Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name):  
   Department of Biology

2. Course prefix and number:  BIOL 112  
   Texas Common Course Number:  1307, 1107, 1407

3. Complete course title:  Introductory Biology II  
   Semester credit hours:  4

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [x] Life and Physical Sciences
   - [ ] Language, Philosophy and Culture
   - [ ] Creative Arts
   - [ ] American History
   - [ ] Government/Political Science
   - [ ] Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - [ ] Yes  
   - [x] No

8. How frequently will the class be offered?  
   every fall and spring semester

9. Number of class sections per semester:  
   20 (fall), 52 (spring)

10. Number of students per semester:  
    480 (fall), 1248 (spring)

11. Historic annual enrollment for the last three years:  
    '09-10 = 1532  
    '10-11 = 1450  
    '11-12 = 1353

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. 
Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:  
   Ira F. Greenbaum  
   Course Instructor

   Approvals:
   [Signature]

14. Department Head
   [Signature]

15. College Dean/Designee
   [Signature]

22 January 2013

See form instructions for submission/approval process.

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Biology 112 is the second half of an introductory two-semester survey of contemporary biology that covers evolution, the history of life, biodiversity (including human parasites and their diseases) and form and function of organisms including human cardiopulmonary and nervous systems. Course includes a weekly laboratory that emphasizes the scientific method to reinforce and provide supplemental information related to the lecture topics.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

The scientific method is the fundamental basis of both lecture and lab. Lectures discuss knowledge obtained from interpreting results of historical scientific experiments and stresses inductive reasoning in interpreting biological patterns and processes. Lecture exams include questions to assess students' ability for critical thinking and analysis and their capacity for synthesizing cumulative information presented during the course. The laboratory component of the course includes the analysis of population-genetic data, detailed comparisons of organisms from single-celled organisms to mammals and exercises measuring cardiopulmonary and nervous-systems function. Lab assessments include weekly quizzes, two major laboratory practical exams and written homeworks and lab reports.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Homework assignments and lab reports require written interpretation of the results of the laboratory exercises. Labs conclude with an instructor/student interactive summary during which students orally respond to and ask questions. Both lecture and lab utilize visual communication through interpretation of data presented in graphs, tables, and figures.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Population genetics, cardiopulmonary and nervous system and animal diversity lab exercises involve the generation and/or manipulation and analysis of of exercise-specific data. These are then summarized in tabular and/or graphic form for homeworks, lab reports, quizzes and practical exams. Then animal diversity lab assignments require didactic analysis (phylogenetic reconstruction) of character-state data. Certain lecture topics, particularly in evolution/population genetics also require students to manipulate and interpret numerical data. Students' facility in these areas are specifically evaluated on lecture exams and laboratory written assignments.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

About one-third of the laboratory exercises require the students to work in groups (typically groups of four). In some cases groups perform separate components of the lab exercise and then interact to combine the results into one synthesis. One lab assignment requires a 5-10 minute in-class group presentation. In all cases the students must individually produce their own written results. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Biology 112, Introductory Biology II
Lecture/Lab Syllabus, Fall 2012
Sections 501-511
MWF 8:00-8:50, HELD 200

Lecture Professor: Dr. Carol Johnson
E-mail: cjohnson@bio.tamu.edu

Office: HELD 320
Phone: 845-7766
Office Hours: MF 9-11 & TR 2-4

Course Description: Biology 112 is the second half of an introductory two-semester survey of contemporary biology that covers evolution, the history of life, and form and function of organisms. Course includes laboratory that reinforces and provides supplemental information related to the lecture topics.

Course Objectives: Biology 112 is a 4 credit hour course that consists of 150 minutes of lecture and 170 minutes of lab each week. Students are expected to attend both lecture and lab where they will be introduced to the fundamentals of evolution, biological diversity, and the form and function of organisms with an emphasis on anatomy and physiology. Upon completion of Biology 112 students should be able to discuss key concepts of evolutionary theory, the history of life on Earth, evidence for evolution, and construct evidence-based phylogenies to describe biodiversity within an evolutionary framework. Students should also demonstrate an understanding of organs and organ systems with respect to supporting the evolution and adaptation of complex organisms to different environments.

Texts/Materials: Texts are on reserve in the Evan’s library annex, 4th floor.

- Campbell Biology (9th edition) by Reece et al – required.
- Student Study Guide for Campbell’s Biology – recommended.
- Mastering Biology Website - recommended. Subscription is included with a new text, or may be purchased online at http://masteringbiology.com
- Safety goggles required
- Dissection kit required

General Information:

Lower Division Biology Instruction Office: Administrative questions pertaining to Biology 112 may be referred to 315 Helden’s (HELD), Mon. through Fri. 8 am - 5 pm, 845-4651, e-mail introbio@mail.bio.tamu.edu.

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Q-Drop: Friday, November 2, (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If you have any question as to whether or not to Q-drop, see your instructor before this date. After this date you must take a letter grade or negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student rule 10.3)

Academic Integrity: "An Aggie does not lie, cheat or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple/duplicate submissions, plagiarism and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office http://aggiehonor.tamu.edu/.

Copyright: The materials used in this course are copyrighted. This includes, but is not limited to syllabi, lecture notes, quizzes, exams, lab problems, in-class materials, review sheets and problem sets. You do not have the right to copy or provide course materials to others without the permission of the instructor.

Americans with Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you
have a disability requiring an accommodation, please contact the Department of Disability Services in Cain Hall, call 845-1637, or e-mail disability@tamu.edu.

Lecture Information:

Lecture Exams: There will be three 100 point lecture exams and one 150 point final exam. Each lecture exam will have 40 multiple-choice questions worth 2.5 points each. The final exam is cumulative and will have 60 multiple-choice questions worth 2.5 points each (for a total of 150 points). Exams cover both lecture material and test assignments. For each exam, you are required to bring a #2 pencil and your TAMU student I.D. Failure to provide positive identification will result in a score of zero for the exam. Your instructor may permit a non-programmable calculator for specified exams. A purse may be carried to your desk but must be closed and left on the floor. No other items will be permitted at your desk.

Lecture Exam Schedule:

<table>
<thead>
<tr>
<th>Lecture Exam</th>
<th>Date</th>
<th>Exam Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1 (100 points)</td>
<td>Wed., Sept. 19</td>
<td>8:00-8:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 2 (100 points)</td>
<td>Wed., Oct. 17</td>
<td>8:00-8:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 3 (100 points)</td>
<td>Wed., Nov. 14</td>
<td>8:00-8:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Final Exam (150 points)</td>
<td>Fri., Dec. 7</td>
<td>10:00-noon</td>
<td>HELD 200</td>
</tr>
</tbody>
</table>

Exam Challenges: After each lecture exam, a copy of the key may be posted on VISTA/BLACKBOARD. If you think there is an error in the key, submit an Exam Challenge Form at: http://www.bio.tamu.edu/lid/. Give referenced support as to why an alternative answer choice should be accepted. Note: Final exams will not be returned or posted, and have no challenge period.

Scantron Grade Checks: Submit grade check requests at http://www.bio.tamu.edu/lid/. You will be notified via e-mail when the results are ready. Bring your student I.D. to 315 HELD to pickup your grade check.

Rescheduling Exams: Lecture exams must be taken with your registered section. A grade of ZERO will be given for any exam taken out-of-section. A final exam may be rescheduled provided you show proof of three or more final exams scheduled for the same day. Make arrangements for an alternate final exam time in 315 HELD during the last week of class.

Make up Exams: Will be given only in the event of an authorized university approved absence (see Absence Policy). The exam may be essay and will be given only with the permission of the instructor. Obtain a signed authorization form from your instructor and bring it to 315 HELD to register for a make up test. You may not take a make up to improve a test score.

Make up Exam Schedule: See Make Up Exams (previous page)

<table>
<thead>
<tr>
<th>Lecture Make up Exam</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>Oct. 4</td>
<td>5:30-6:30</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 2</td>
<td>Nov. 1</td>
<td>5:30-6:30</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 3</td>
<td>Nov. 29</td>
<td>5:30-6:30</td>
<td>HELD 200</td>
</tr>
</tbody>
</table>
## BIOLOGY 112 LECTURE SCHEDULE

### MECHANISMS OF EVOLUTION

<table>
<thead>
<tr>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descent with modification: A Darwinian View of Life</td>
<td>Ch. 22</td>
</tr>
<tr>
<td>The Evolution of Populations</td>
<td>Ch. 23</td>
</tr>
<tr>
<td>The Origin of Species</td>
<td>Ch. 24</td>
</tr>
<tr>
<td>The History of Life on Earth</td>
<td>Ch. 25</td>
</tr>
</tbody>
</table>

### THE EVOLUTIONARY HISTORY OF BIOLOGICAL DIVERSITY

<table>
<thead>
<tr>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phylogeny and the Tree of Life</td>
<td>Ch. 26</td>
</tr>
<tr>
<td>Bacteria and Archaea</td>
<td>Ch. 27</td>
</tr>
<tr>
<td>Protists</td>
<td>Ch. 28</td>
</tr>
<tr>
<td>Plant Diversity I: How Plants Colonized Land</td>
<td>Ch. 29</td>
</tr>
<tr>
<td>Plant Diversity II: The Evolution of Seed Plants</td>
<td>Ch. 30</td>
</tr>
<tr>
<td>Fungi</td>
<td>Ch. 31</td>
</tr>
<tr>
<td>An Introduction to Animal Diversity</td>
<td>Ch. 32</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>Ch. 33</td>
</tr>
<tr>
<td>Vertebrates</td>
<td>Ch. 34</td>
</tr>
</tbody>
</table>

### ANIMAL FORM AND FUNCTION

<table>
<thead>
<tr>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Nutrition</td>
<td>Ch. 41</td>
</tr>
<tr>
<td>Circulation and Gas Exchange</td>
<td>Ch. 42</td>
</tr>
<tr>
<td>Osmoregulation and Excretion</td>
<td>Ch. 44</td>
</tr>
<tr>
<td>Hormones and the Endocrine System</td>
<td>Ch. 45</td>
</tr>
<tr>
<td>Animal Reproduction</td>
<td>Ch. 46</td>
</tr>
<tr>
<td>Nervous System</td>
<td>Ch. 49</td>
</tr>
</tbody>
</table>
Lab Information:

Lab Instructor: ________________________ E-mail: _____________________________
Section: __________ Office: HELD 317 E Office Hours: __________ Phone: 845-4653

Lab Safety:
- You will be required to sign an ONLINE Safety Agreement indicating that you have read,
  understood, and agree to follow the safety regulations required for this course.
  A. Logon to the Howdy Portal, select My record
  B. Find the registration box link to LSA (lab safety acknowledgment)
  C. Read the LSA and then agree to it.
- Eating, drinking, and use of tobacco products are prohibited in the laboratory.
- University safety regulations require closed-toe shoes in the laboratory. You will be refused
  admittance to the lab if you wear sandals or open-toed shoes.
- Safety goggles are required. Bring safety goggles to all labs.

Dissection Kit: Required.

Lab Exams: There will be two 100 point practical exams. Each practical exam will have 25 stations with 1
to 4 questions per station for a total of 100 points per exam. The second practical exam is not
comprehensive.

Quizzes: There will be nine 15-point quizzes. These may be a combination of written and practical
questions and with the exception of the first quiz will cover the current week’s lab.

Assignments: There are 7 assignments worth a total of 90 points. Two points are automatically deducted for
late assignments, and an additional point is deducted for each additional day overdue. Late homework may
be logged in at 317E HELD. Should HELD 317E be closed, late homework may be logged in at HELD 315.

Participation Points: Each TA will award a maximum of 25 points based upon cooperation, class
participation, attendance, and cleanup.

Bonus Points: There are no bonus point opportunities in lab!

Regrading: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment,
so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two
weeks of the assignment being returned to the student and must be completed before the last official day of
classes.

Lab Rescheduling: A verifiable university approved excuse is required before a student may be
rescheduled into another lab section during the same week, if space permits. To reschedule a missed lab
during the same week lab is missed, bring written verifiable evidence of a university excused absence to
315 HELD as early as possible. There will be NO make up labs. If you miss a lab for a university approved
reason and cannot be rescheduled, then you must contact your lab instructor within two working days after
the absence to make arrangements for a make up quiz or assignment. Failing to contact your lab instructor in a
timely manner will result in a zero for the missed assignment.

Makeups: Lab makeup assignments are restricted to students with approved absences (see Student rule 7)
and must be scheduled by the student within two weeks of the end of the absence. Note: Rule 7.1.6.3 “An
absence for a non acute medical service does not constitute an excused absence”. A non acute medical
excuse will not be accepted as a valid reason to miss a practical exam.
Laboratory Assignments:

Work individually: All laboratory assignments are individual projects. You may not work together on written assignments without the permission of your lab instructor.

Plagiarism and Proper Citation: Copying from texts, lab manuals, internet sources, or other students without proper credit is plagiarism and will be considered cheating. If you quote from another source, you must credit that source in your text and properly cite a reference in the literature cited section. The following is an example of a proper citation:


Assignment 1 - Population Genetics (10 pts). Five-ten minute in-class group presentation. Describe the technique used, the relationship between sickle cell allele and malaria, your data analysis and results culminating in a funding recommendation to the World Health Organization (WHO). If asked to submit a write-up, attach a competed Table 1-3 and answer the questions in addition to writing a summary statement recommending where WHO should concentrate their malaria eradication and treatment budget.

Assignment 2 - Single-celled organism drawings (10 pts). Work individually. At the end of lab, submit a labeled drawing of each of the single-celled organism wet mounts or slides examined in the lab. Label the structure, the organism, and the magnification at which each drawing was made. Submit to your instructor before you leave lab.

Assignment 3 - Plant Diversity (10 pts). Work individually. Complete the table on page 83, draw and label generalized life cycle. Complete part 3 starting on page 99 and label figure 5-16. Submit to your instructor before you leave lab.

Assignment 4 - Flowering Plant Anatomy (10 pts). Work individually. Draw and label the structures that differentiate monocot root and stem anatomy from eudicot root and stem anatomy. Complete the Table on page 123. Submit both to your instructor before you leave lab.

Assignment 5 - Animal Diversity report (20 pts). Work individually. Summarize the evolutionary relationship of the clades of the animals studied in chapters 8, 9, and 10. Construct a character state table for the clades and construct a phylogeny showing the distinguishing traits at each branch point of the cladogram. Write a one page description describing the evolutionary changes present on the phylogeny. Submit the text via turn-it-in.com, print the receipt and attach the description, receipt, character state table, and cladogram when you submit the assignment to your lab instructor.

Assignment 6 - Cardiopulmonary (20pts). Work individually. Use the guidelines in Appendix B to write a report summarizing the effect of exercise on cardiopulmonary function. Attach an ECG trace. Report on the effect of exercise on heart rate, pulmonary rate and blood pressure. Use the means of the class data and determine whether there was a gender effect. Submit your report to Turn-it-in.com and print the receipt. Attach the cover sheet from Appendix B to your report and turn in the package to your lab instructor.

Assignment 7 - Nervous System in-class summary (10pts). Work individually. Complete table 14-2 and write a brief paragraph describing which areas were most sensitive. Also list some advantages of greater sensitivity in these areas. Submit the table and write-up to your instructor before you leave lab.
Student Support:

Help desk: Students needing individual assistance will find a Teaching Assistant in 317E HELD - phone 845-4653. Check the schedule posted outside of 315 HELD.

Biology Image Library: Images of lab slides and specimens for review are available online via the TAMU Biology Images Library at http://biologyimages.tamu.edu. Images are taken offline prior to the beginning of each practical exam week.

1st Exam Review: Username: Biology 112 Password: Biology 112 Goes offline: M, Oct. 8 7:45 a.m.
2nd Exam Review: Username: Biology 112-2nd Password: Biology 112 Goes offline: M, Nov. 26 7:45 a.m.

Problems: Courtesy dictates that you first discuss any problem with your laboratory instructor. If the problem has not been resolved, please contact Mr. Chris Lee (Teaching Coordinator) at 458-3399 (or by e-mail at clee@mail.bio.tamu.edu) to make an appointment to discuss the situation.
# BIOLGY 112 LABORATORY SCHEDULE

<table>
<thead>
<tr>
<th>LAB MANUAL CHAPTER</th>
<th>DATES</th>
<th>ASSIGNMENT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1 - Population Genetics</td>
<td>Aug. 27-30</td>
<td>Assignment 1 (in-class)</td>
</tr>
<tr>
<td>Chapter 2 - Evidence of Evolution - Quiz 1</td>
<td>Sept. 3-6</td>
<td>Assignment 2 (in-class)</td>
</tr>
<tr>
<td>Chapter 3 - Single-Celled Organisms - Quiz 2</td>
<td>Sept. 10-13</td>
<td>Assignment 3 (in-class)</td>
</tr>
<tr>
<td>Chapters 4 &amp; 5 - Plant Diversity I and II - Quiz 3</td>
<td>Sept. 17-20</td>
<td>Assignment 4 (in-class)</td>
</tr>
<tr>
<td>Chapter 6 - Flowering Plant Anatomy - Quiz 4</td>
<td>Sept. 24-27</td>
<td></td>
</tr>
<tr>
<td>Chapter 8 - Invertebrate Diversity I - Quiz 5</td>
<td>Oct. 1-4</td>
<td></td>
</tr>
<tr>
<td><strong>LAB PRACTICAL EXAM 1</strong></td>
<td>Oct. 8-11</td>
<td></td>
</tr>
<tr>
<td>Chapter 9 - Invertebrate Diversity II</td>
<td>Oct. 15-18</td>
<td></td>
</tr>
<tr>
<td>Chapter 10 - Deuterostomes - Quiz 6</td>
<td>Oct. 22-25</td>
<td>Assignment 5 submit text via Turn-it-in.com</td>
</tr>
<tr>
<td>Chapter 11 - Cardiopulmonary Function - Quiz 7</td>
<td>Oct. 29-Nov. 1</td>
<td></td>
</tr>
<tr>
<td>Chapter 12 - Digestive and Chapter 13 - Osmoregulation - Quiz 8</td>
<td>Nov. 5-8</td>
<td>Assignment 6 submit text via turn-it-in.com</td>
</tr>
<tr>
<td>Chapter 14 - Nervous System - Quiz 9</td>
<td>Nov. 12-15</td>
<td>Assignment 7 (in class)</td>
</tr>
<tr>
<td><strong>Thanksgiving</strong></td>
<td>Nov. 19-22</td>
<td></td>
</tr>
<tr>
<td><strong>LAB PRACTICAL EXAM 2</strong></td>
<td>Nov. 26-29</td>
<td></td>
</tr>
</tbody>
</table>

*Goggles are required every week.
*Open-toed shoes are prohibited in lab. Must wear closed-toe shoes.

## Lab Practical Make up Exam Schedule

<table>
<thead>
<tr>
<th>Make up Exam</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Make up Exam 1</td>
<td>TBA</td>
</tr>
<tr>
<td>Lab Make up Exam 2</td>
<td>TBA</td>
</tr>
</tbody>
</table>
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Geography

2. Course prefix and number: GEOG 205

3. Texas Common Course Number: 

4. Complete course title: Environmental Change

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:

   - □ Communication
   - □ Mathematics
   - X Life and Physical Sciences
   - □ Language, Philosophy and Culture
   - □ Creative Arts
   - □ American History
   - □ Government/Political Science
   - □ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - □ Yes
   - X No

8. How frequently will the class be offered? Fall and Spring Semesters

9. Number of class sections per semester: 1

10. Number of students per semester: Up to 100 students per semester

11. Historic annual enrollment for the last three years:
    - FY2011: 50
    - FY2012: 67
    - FY2013: 55

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by: [Signature]
    Course Instructor
    Date: January 10, 2013

13. Approvals:
    [Signature]
    Date: January 14, 2013

14. Department Head
    [Signature]
    Date: 1.17.13

15. College Dean/Designee
    [Signature]

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The objective of this course is to explore our dynamic biophysical environment and to consider how it has and will continue to change. Through the use of place-based case studies, students are introduced to the biophysical environment using a systems approach that describes the feedbacks between the atmosphere, hydrosphere, lithosphere and biosphere at a range of scales. Specifically, students are introduced to fundamental concepts and a general conceptual model of environmental change through the lectures, and are required to use the scientific method to analyze and interpret sample data of environmental change at a range of spatial and temporal scales and collected using a variety of methods. The analyses completed in the laboratory exercises will allow the students to make predictions about the nature and extent of future environmental change in the future, and to assess the importance of human-natural coupling affecting that change.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

The design of this course introduces students to the scientific method through problem-based laboratory assignments that require students to complete a literature review, develop hypotheses for real-life scenarios based on that literature review, and complete an analysis of sample data to test those hypotheses. The lectures provide students with the fundamental concepts in physical geography and introduce a conceptual framework to understand how and why the environment changes at a range of spatial and temporal scales. In-class activities and tests reinforce problem solving, analysis techniques and the development of testable hypotheses.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

To understand and explain how the environment changes requires that students are able to interpret and synthesize existing literature with a focus on refereed journal articles. Specifically, students are required to: 1) compose a literature review that effectively summarizes the literature, 2) develop testable hypotheses based on their understanding of the literature, 3) test those hypotheses using sample data, and 4) communicate their interpretation of the sample data. Testing the hypotheses requires that students are able to communicate the results of their analysis through effective graphing of time and spatial series. Students are also provided an opportunity to development communication skills through the in-class activities and essay-based questions on exams.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):
Texas A&M University
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

The majority of this class requires students be able to interpret and analyze temporal and spatial data of environmental change at a range of scales and using a variety of measurement techniques. In this respect, the students are required to relate conceptual models (presented through the lectures), with empirical facts from the literature and the results of their own analyses of sample datasets.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Students are encouraged to openly discuss and debate causes and projections of past and future environmental change based on empirical data and conceptual models of change introduced in the lectures with a specific focus on past and current climate change. In-class activities and a limited number of online laboratory assignments (via moderated discussion boards) also require students to collaborate in the interpretation of quantitative and qualitative data of past environmental change, which requires them to communicate with one another and develop a common statement about why and how the environment has and will continue to change.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
TEXAS A&M UNIVERSITY
DEPARTMENT OF GEOGRAPHY
GEOG 205 ENVIRONMENTAL CHANGE

INSTRUCTOR: Dr. Chris Houser
EMAIL: chouser@tamu.edu

OFFICE HOURS: TBD
OFFICE: CSA207

LECTURES: TBD

LABORATORY: Virtual laboratory assignments with online support by a teaching assistant and peers through moderated discussion boards. Each laboratory will require students to complete a literature review based on a selection of readings provided by the instructor, and analyze and synthesis data from a variety of sources to quantify a change in some aspect of the environment. Results of this analysis will allow the students to describe and explain the environmental change recorded in their data.

OBJECTIVES: The objective of this course is to explore our dynamic biophysical environment and to consider how it has and will continue to change. Through the use of place-based case studies, students are introduced to the biophysical environment using a systems approach that describes the feedbacks between the atmosphere, hydrosphere, lithosphere and biosphere at a range of scales. Specifically, students are introduced to fundamental concepts and a general conceptual model of environmental change through the lectures, and are required to use the scientific method to analyze and interpret sample data of environmental change at a range of spatial and temporal scales and collected using a variety of methods. The analyses completed in the laboratory exercises will allow the students to make predictions about the nature and extent of future environmental change in the future, and to assess the importance of human-natural coupling affecting that change.

LEARNING OUTCOMES: At the end of the course, students are expected to:
1. Identify and describe the important attributes, elements and connections within the physical environment from a systems perspective
2. Describe the dynamic nature of the environment at a range of spatial and temporal scales, and identify how change results from adjustments between the different components
3. Discuss and apply methods and technology to measuring environmental change, and recognize the limitations to these methods in predicting change
4. Describe how environmental change of the past and present has and continues to affect society and the feedbacks therein

COURSE EVALUATION SCHEME:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>20%</td>
</tr>
</tbody>
</table>

The three exams will be based on the material covered in the lectures and readings, although the tests will emphasize the material covered in the lectures. While the tests are non-cumulative the material is based on similar concepts and builds towards a unified model of environmental change.
REQUIRED TEXT: The Earth System, 3rd Ed., 2010; Kump, Kasting, and Crane; Prentice Hall.

GRADING SCHEME:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>≥90%</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>80-89%</td>
</tr>
<tr>
<td>C</td>
<td>Satisfactory</td>
<td>70-79%</td>
</tr>
<tr>
<td>D</td>
<td>Passing</td>
<td>60-69%</td>
</tr>
<tr>
<td>F</td>
<td>Failing</td>
<td>≤59%</td>
</tr>
</tbody>
</table>

SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Reading Folder</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/27</td>
<td>Definition of Change</td>
<td>Our Changing Earth</td>
<td></td>
</tr>
<tr>
<td>09/03</td>
<td>Definition of Change Cont’d</td>
<td>From Global winds to turbulence</td>
<td></td>
</tr>
<tr>
<td>09/10</td>
<td>Winds of Change</td>
<td></td>
<td>Quantifying Change</td>
</tr>
<tr>
<td>09/17</td>
<td>Water, Water Everywhere</td>
<td>A lack of Rain</td>
<td>Meteorological Records</td>
</tr>
<tr>
<td>09/24</td>
<td>Storms and Hurricanes</td>
<td></td>
<td>Streamflow Records</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Exam 1 September 27</td>
</tr>
<tr>
<td>10/01</td>
<td>Short Term Climate Variability</td>
<td>Our Variable Climate</td>
<td></td>
</tr>
<tr>
<td>10/08</td>
<td>Short Term Climate Variability Cont’d</td>
<td></td>
<td>Drought in Texas</td>
</tr>
<tr>
<td>10/15</td>
<td>Under a Mile of Ice</td>
<td>Glacial History of North America</td>
<td>The Climate Past</td>
</tr>
<tr>
<td>10/22</td>
<td>Under a Mile of Ice Cont’d</td>
<td></td>
<td>Sea Level Curves</td>
</tr>
<tr>
<td>10/29</td>
<td>Ancient Climates</td>
<td>Very old earth</td>
<td>Defining Change</td>
</tr>
<tr>
<td>11/05</td>
<td>First Earth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/12</td>
<td>Carbon Cycle</td>
<td>Mountain Building and Erosion</td>
<td>Landscape Change</td>
</tr>
<tr>
<td>11/19</td>
<td>Carbon Cycle Cont’d</td>
<td></td>
<td>Thanksgiving November 22</td>
</tr>
<tr>
<td>11/26</td>
<td>Coupled Human and Natural Systems</td>
<td></td>
<td>Coastal Change</td>
</tr>
</tbody>
</table>

Exam 3
December 7 from 12:30-2:30 am in HECC 203

ONLINE COURSE INFORMATION: http://elearning.tamu.edu
CORE OBJECTIVES

Critical Thinking: The design of this course introduces students to the scientific method through problem-based students to scientific inquiry through problem-based laboratory assignments that require students to complete a literature review, develop hypotheses for an real-life scenario based on that literature review and complete an analysis of sample data to test those hypotheses. The lectures provide students with the fundamental concepts in physical geography and introduce a conceptual framework to understand how and why the environment changes at a range of spatial and temporal scales. In-class activities and tests reinforce problem solving, analysis techniques and the development of testable hypotheses.

Communication: To understand and explain how the environment changes requires that students are able to interpret and synthesize existing literature with a focus on refereed journal articles. Specifically, students are required to: 1) compose a literature review that effectively summarizes the literature, 2) develop testable hypotheses based on their understanding of the literature, 3) test those hypotheses using sample data, and 4) communicate their interpretation of the sample data. Testing the hypotheses requires that students are able to communicate the results of their analysis through effective graphing of time and spatial series. Students are also provided an opportunity to development communication skills through the in-class activities and essay-based questions on exams.

Empirical and Quantitative Skills: The majority of this class requires students be able to interpret and analyze temporal and spatial data of environmental change at a range of scales and using a variety of measurement techniques. In this respect, the students are required to relate conceptual models (presented through the lectures), with empirical facts from the literature and the results of their own analyses of sample datasets.

Teamwork: Students are encouraged to openly discuss and debate causes and projections of past and future environmental change based on empirical data and conceptual models of change introduced in the lectures with a specific focus on past and current climate change. In-class activities and a limited number of online laboratory assignments (via discussion boards) also require students to collaborate in the interpretation of quantitative and qualitative data of past environmental change, which requires them to communicate with one another and develop a common statement about why and how the environment has and will continue to change.

COURSE AND UNIVERSITY POLICIES:

CLASS ATTENDANCE: The University views class attendance as the responsibility of the student. Students will be assigned a time when they are required to attend the online laboratories, which will also be attended by the professor and teaching assistant. While attendance is not part of your assessment, your performance is directly related to your attendance- the more classes you miss the lower your grade tends to be. Students who miss class are responsible for getting the notes from a classmate. For more information on University Excused Absences please [http://student-rules.tamu.edu](http://student-rules.tamu.edu).
Students seeking an excused absence on an exam day must notify the professor or the Department of Geography by the end of the next working day following the absence, as described in Texas A&M University Student Rules. For an absence considered excused by the university (http://student-rules.tamu.edu/rule7.htm), the student will be required to make-up the missed exam. At the instructor's discretion, the make-up exam might be in a different format (i.e., essay instead of multiple choice) than the original exam.

**EMAIL:** All Texas A&M students should use their official TAMU email accounts when emailing the instructor or the teaching assistant. I may send out class announcements via the neo email system and it is your responsibility to check your account regularly.

**THE AMERICANS WITH DISABILITIES ACT (ADA)** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

**COPYRIGHT AND PLAGIARISM POLICY:** All materials used in this class are copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless permission is expressly granted.

As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, http://student-rules.tamu.edu/, under the section "Scholastic Dishonesty."

**HONOR SYSTEM AND ACADEMIC DISHONESTY:** "An Aggie does not lie, cheat, or steal, or tolerate those who do." Texas A&M has a Scholastic Dishonesty policy to which both students and faculty must comply. If you have any questions about the University's Scholastic Dishonesty Policy, please review the Student Rules or see me. The Aggie Honor program is the new program that will handle all cases of academic dishonesty. The Aggie Honor program website is located at http://www.tamu.edu/aggiehonor.
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Geography  Click here to enter text.
2. Course prefix and number: GEOG 213  3. Texas Common Course Number:
4. Complete course title: Planet Earth Lab  5. Semester credit hours: 1
6. This request is for consideration in the following Foundational Component Area:
   □ Communication  □ Creative Arts
   □ Mathematics  □ American History
   □ Life and Physical Sciences  □ Government/Political Science
   □ Language, Philosophy and Culture  □ Social and Behavioral Sciences
7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   □ Yes  □ No
8. How frequently will the class be offered? Every semester
9. Number of class sections per semester: 27
10. Number of students per semester: 675

This completed form must: be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:  12/21/12
   Course Instructor
   Date
   Approvals:
   Department Head  Date  January 14, 2013
   Date
15. College Dean/Designee  1/17/13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at
www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

GEOG 213 is a laboratory course focused on describing and explaining the earth’s surface. We group the surface features into three broad categories (climates, ecosystems, and landforms) that correspond with the three major subdisciplines of contemporary physical geography, namely, climatology, biogeography, and geomorphology. In this course we describe the earth’s surface and seek a conceptual understanding of how surface features develop. We use a problem-based approach, as science is at its core a problem-centered endeavor. Students use graphs, maps, quantitative expressions, and conceptual models to understand and predict how earth surface systems operate. Students also gain an understanding of how earth systems (atmosphere, hydrosphere, biosphere, lithosphere) interact to form the landscapes we observe, and how human societies interact with these natural systems. Human interactions with their environments is a fundamental theme in geography.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

GEOG 213 is a one-hour laboratory course in physical geography. Students complete laboratory assignments that entail learning fundamental concepts and applying those concepts to various scenarios. Problem-solving lies at the heart of scientific inquiry; by using a problem-based approach the students gain general insights about how science is conducted, in addition to specific insights about concepts in physical geography. Laboratory activities require problem-solving, creative thinking, analysis, synthesis, concepts, etc.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Physical geography is a visual discipline, as it deals with maps and other representations of the earth’s surface (e.g., satellite images, photographs). It also entails graphical characterizations of processes and patterns. Through the laboratory exercises the students learn to interpret and synthesize the information contained in these characterizations. They also conduct their own mapping and graphing, and communicate their interpretations in writing.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Empirical observation and quantification lie at the heart of the laboratory experience. Students grapple with linking conceptual models to empirical facts, whether they are conducting climate observations in the field, analyzing maps in the laboratory, or conducting basic statistical analyses.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Students learn the role and limitations of empirical observations as they relate to different points of view about issues such as resource management and climate change. Most of the laboratory exercises require collaboration among multiple team members to obtain the data required for the analyses relevant to the problems they are asked to solve.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
GEOG 213 – 500: Planet Earth Lab
Texas A&M University

Instructor: Charles Lafon  Email: Speteru@tamu.edu
TA: Swetha Peteru  Office: CSA 203F
Course Time: Thursday 2:20 pm – 4:20 pm  Office Hours: Tuesday 10:30 – 11:00 am;
Course Location: CSA 311  Thursday 9:30 – 11:00 am; or by appointment
Online: http://elearning.tamu.edu/

Course Description

GEOG 213: Planet Earth Lab is intended to give students hands on experience with basic concepts in physical geography. This course covers a variety of topics and tools, including GPS, mapping, climatic analysis, weather maps, surveying, dendroclimatology, and hydrology. A problem-based approach underlies the course.

Learning Outcomes

Students will be able to

- Explain basic earth science concepts
- Solve problems by applying earth science concepts and methods
- Articulate how science impacts society
- Extract important points and synthesize material
- Describe earth surface features and concepts through maps, graphs, text, and quantitative expressions
- Solve problems by collaborating in data collection, analysis, and interpretation

Required Books


The lab manual for this course is mandatory. Each week we will be working on a lab directly from the lab manual, which will be turned in the following week. Photocopies of labs or labs that have already been worked on will not be accepted. Students should come to class having read the lab for the particular week (see lab schedule below) as labs will typically be much easier if there is some prior knowledge of the work we will be doing in class.

There are also good textbooks in the library that cover introductory physical geography and there are online textbooks that are good supplements as well. For example – www.physicalgeography.net. Additionally, students are encouraged to bring calculators capable of computing simple calculations to lab each week (cell phones are NOT acceptable calculators). Basic knowledge of Microsoft Excel (or similar) will be helpful for at least one lab.
## Lab Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 27–31</td>
<td>Syllabus and Introductions</td>
</tr>
<tr>
<td>2</td>
<td>Sep 3–7</td>
<td>Lab 1: How do you navigate with a GPS?</td>
</tr>
<tr>
<td>3</td>
<td>Sep 10–14</td>
<td>Lab 2: How do you read a map?</td>
</tr>
<tr>
<td>4</td>
<td>Sep 17–21</td>
<td>Lab 3: How much energy do we get from the sun?</td>
</tr>
<tr>
<td>5</td>
<td>Sep 24–28</td>
<td>Lab 4: How would the climate change if we replaced a grassy field with a parking lot?</td>
</tr>
<tr>
<td>6</td>
<td>Oct 1–5</td>
<td>Lab 5: What controls the climate?</td>
</tr>
<tr>
<td>7</td>
<td>Oct 8–12</td>
<td>Lab 6: What is the weather going to be tomorrow?</td>
</tr>
<tr>
<td>8</td>
<td>Oct 15–19</td>
<td>Lab 7: How cold was it in 1816?</td>
</tr>
<tr>
<td>9</td>
<td>Oct 22–26</td>
<td>Lab 8: How will the type of trees in this forest change in the future?</td>
</tr>
<tr>
<td>11</td>
<td>Nov 5–9</td>
<td>Lab 10: How do you make a topographic map? Part 2: Creating contour lines</td>
</tr>
<tr>
<td>12</td>
<td>Nov 12–16</td>
<td>Lab 11: Is there enough water</td>
</tr>
<tr>
<td>13</td>
<td>Nov 19–23</td>
<td>Thanksgiving Holiday: No Labs</td>
</tr>
<tr>
<td>14</td>
<td>Nov 26–30</td>
<td>Lab 12: How large is a 10-year flood?</td>
</tr>
</tbody>
</table>

## Grading

Your grade will consist of 12 lab assignments, assignments regarding current events, a participation grade, and responding to discussion questions posted on E-learning. The grades are broken down as follows:

- 12 lab assignments - 60%
- Current events assignments - 20%
- E-learning posts - 10%
- Participation - 10%

Final grades will be assigned based on the following scales:

\[
\begin{align*}
90\% & = A \\
80\% - 89\% & = B \\
70\% - 79\% & = C \\
60\% - 69\% & = D \\
<60\% & = F
\end{align*}
\]
Attendance and Other Policies

*I expect all students to attend every session having done the background reading.* If a student does not attend class and does not have a written university-approved absence (see section 7.1 of the TAMU student rules at [http://student-rules.tamu.edu](http://student-rules.tamu.edu)), the student will receive a zero for that laboratory assignment. If you miss a session for a *university-approved reason*, you must follow the procedures outlined in section 7.3 of the student rules to have your absence excused. If you missed class with an excused reason, you must make arrangements to meet with your lab instructor as soon as possible to make-up the assignment.

Each lab assignment will be due at the start of your next lab (unless stated otherwise). Late lab assignments will only be accepted with instructor permission. Except in cases of university excused absences, labs turned in more than one week after the due date will not be accepted.

**Cell Phones:** Cell phone use in class is NOT acceptable. All cell phones should be turned off at all times during lab and kept in backpacks, purses, etc. There should be absolutely no texting in class, and certainly no answering the phone while in class. Students should bring a separate calculator, as cell phones will not be allowed. If students fail to abide by this policy, the student will be told to leave class and will only be allowed to return with instructor permission.

**Scholastic Dishonesty**

It is my hope that academic dishonesty will not be a problem in this class. Texas A&M does, however, have a *Scholastic Dishonesty* policy to which both students and faculty must comply. If you have any questions about the University’s Scholastic Dishonesty policy please review the Student Rules or see me. The Aggie Honor program is the program that handles all cases of academic dishonesty, their website is located at: [http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/).

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[http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/)
Student Support
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact:
The Department of Student Life: Services for Students with Disabilities
Cain Hall, Room B118, 979-845-1637, http://disability.tamu.edu/

There are numerous other student support organizations on campus including:
- Student Learning Center, 118 Hotard Hall, 845-2724; http://slc.tamu.edu/
- Student Counseling Service, Cain Hall, 845-4427; http://www.scs.tamu.edu/
Texas A&M University  
Core Curriculum  
Initial Request for a lower division course included in the current Core Curriculum  
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Geology & Geophysics

2. Course prefix and number:  
   GEOL 101  
   GEOL 1303, 1103, 1403  

3. Texas Common Course Number: 

4. Complete course title: Principles of Geology

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:  
   ☑ Communication  
   ☑ Mathematics  
   ☑ Life and Physical Sciences  
   ☑ Language, Philosophy and Culture  
   ☑ Creative Arts  
   ☑ American History  
   ☑ Government/Political Science  
   ☑ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:  
   ☑ Yes  
   ☑ No

8. How frequently will the class be offered? Every semester

9. Number of class sections per semester: 50 fall and spring, 5 summer

10. Number of students per semester: 1000

11. Historic annual enrollment for the last three years: 1,884, 1,956, 2,391

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc.  
Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:  
   [Signature]  
   1/14/13  
   Date

   [Instructor]

14. Department Head:  
   [Signature]  
   1/14/13  
   Date

   [Department Head]

15. College Dean/Designee:  
   [Signature]  
   1/17/13  
   Date

   [Dean/Designee]

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www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Course topics will follow the Earth Science Literacy Principles, published by the Earth Science Literacy Project (http://www.earthscienceliteracy.org). This NSF-sponsored publication was developed in conjunction with every major geosciences professional society. The overall focus of the course is on understanding the functioning of Earth systems. A lab provides practical exposure to scientific reasoning and the scientific method as they are applied to geological problems.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Critical thinking will be integrated into each learning objective through lab activities allowing students to work with geological data. The lab will provide exercises requiring students to think critically about geological problems by 1) identifying data and areas of uncertainty, 2) distinguishing between data that are relevant and irrelevant to specific problems, and 3) logically testing hypotheses. Evaluation will be based on written lab reports and quizzes and graded using a rubric based on the Steps for Better Thinking Competency Rubric (Walcott, 2006; http://www.WolcottLynch.com). Lectures will provide examples of evidence-based reasoning providing the basis for major geological theories; lab instructors will guide students through specific examples and provide feedback on exercises.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Communication will be integrated into each learning objective through lab reports and quizzes. The lab will provide exercises requiring students to communicate about geological problems by 1) organizing written discussions in order to emphasize relevant data and provide a logical flow to a well-supported conclusion, and 2) supporting written text with well-chosen diagrams or illustrations. Evaluation will be based on written lab reports and quizzes. Students will be supplied with examples of excellent, satisfactory, and poor geological writing and asked to compare with their own writing.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Empirical and quantitative skills will be integrated into each learning objective through lab reports and quizzes. The lab will provide exercises requiring students to use empirical and quantitative skills to solve geological problems by 1)
Texas A&M University  
Core Curriculum  

Initial Request for a Course Addition to the Fall 2014 Core Curriculum  

constructing and analyzing graphs, 2) describing three-dimensional structures or surfaces from two-dimensional representations (e.g. maps or projections), and 3) identifying patterns or trends from historical data. Lectures will regularly include examples of graphs, maps, and historical data.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Teamwork will be integrated into many learning objectives through group lab exercises. The lab will provide several exercises requiring students to work in teams to solve geological problems by 1) recognizing different points of view, 2) designing and executing plans to test or reconcile opposing hypotheses, and 3) identifying and reporting areas of uncertainty that prevent consensus.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number  GEOL 101: Principles of Geology
Term  Fall 2014
Meeting times and location

Course Description and Prerequisites
Physical and chemical nature of the Earth and dynamic processes that shape it; plate tectonics, Earth's interior, materials it is made of, age and evolution, earthquakes, volcanism, erosion and deposition; introduces physical and chemical principles applied to the Earth. Not open to students who have taken GEOL 104 or GEOL 320.

Prerequisites: none

Learning Outcomes
Students who successfully complete GEOL 101 will demonstrate knowledge of the following general themes in the geological sciences¹:
- Rocks and other materials record the 4.6 billion year history of the Earth. A variety of rock types are distributed throughout the Earth's surface and interior.
- The Earth is a complex system of interacting rock, water, air, and life.
- The Earth is continuously changing through geological, hydrological, physical, chemical, and biological processes that are explained by laws.
- Plate tectonics is a unifying theory that explains many dynamic features of the Earth.
- Water plays critical roles in a wide range of surface and subsurface Earth processes.
- Life evolves on a dynamic Earth and continuously modifies the Earth.
- Humans depend on the Earth for resources.
- Natural hazards pose risks to humans.
- Humans significantly alter the Earth.

Students will learn how to use and express the above bodies of geological knowledge through individual and group lab exercises that will also develop the following core skills. Students will be assessed on both knowledge and skills in exercises and tests in lab. (For instance, students may be asked to work in groups to identify specific rocks that would record information about the tectonic history of a region, analyze a map showing the distribution of their selected rocks, and then report their findings in writing.)
- Think critically about geological problems by 1) identifying data and areas of uncertainty, 2) distinguishing between data that are relevant and irrelevant to specific problems, and 3) logically testing hypotheses.
- Communicate about geological problems by 1) organizing written discussions in order to emphasize relevant data and provide a logical flow to a well-supported conclusion, and 2) supporting written text with well-chosen diagrams or illustrations.
- Use empirical and quantitative skills to solve geological problems by 1) constructing and analyzing graphs, 2) describing three-dimensional structures or surfaces from two-dimensional representations (e.g. maps or projections), and 3) identifying patterns or trends from historical data.
- Work in teams to solve geological problems by 1) recognizing different points of view, 2) designing and executing plans to test or reconcile opposing hypotheses, and 3) identifying and reporting areas of uncertainty that prevent consensus.

¹ Learning outcomes are modified from Earth Science Literacy Principles, published by the Earth Science Literacy Project (http://www.earthscienceliteracy.org).
Instructor Information

Name: Michael Tice
Telephone number: 345-3138
Email address: mtice@geos.tamu.edu
Office hours: 314 Halbouty

Textbook and/or Resource Material
Tarbuck, Lutgens, and Tasa, Earth, 10th Ed., 2011
Busch, Physical Geology Laboratory Manual, 4th Ed.

Grading Policies
Grades will be assigned based on the following assessments: three tests (total of 30%), lab (30%), and final exam (40%). All grades will be rounded to the nearest tenth of a percent (i.e., 89.95% → 90.0%, 89.94% → 89.9%) and converted to a letter grade as follows: 90.0–100.0 = A, 80.0–89.9 = B, 70.0–79.9 = C, 60.0–69.9 = D, <60.0 = F.

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading (Tarbuck page numbers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to class and geology; the scientific method; introduction to geologic time; origin of the solar system; Earth's internal structure and external features; plate tectonics</td>
<td>1–22, 22–29</td>
</tr>
<tr>
<td>2</td>
<td>Minerals and the rock cycle</td>
<td>29–34, 87–105</td>
</tr>
<tr>
<td>3</td>
<td>Igneous rocks</td>
<td>107–128, 128–135</td>
</tr>
<tr>
<td>4</td>
<td>Volcanoes; weathering and sedimentary rocks</td>
<td>137–171, 173–186, 199–214</td>
</tr>
<tr>
<td>5</td>
<td>Test 1; sedimentary rocks</td>
<td>214–227</td>
</tr>
<tr>
<td>6</td>
<td>Metamorphic rocks; relative time</td>
<td>229–253, 255–267</td>
</tr>
<tr>
<td>7</td>
<td>Absolute time; crustal deformation</td>
<td>267–277, 279–290</td>
</tr>
<tr>
<td>8</td>
<td>Crustal deformation</td>
<td>290–301</td>
</tr>
<tr>
<td>9</td>
<td>Test 2; Earthquakes</td>
<td>303–331</td>
</tr>
<tr>
<td>10</td>
<td>Divergent plate boundaries; convergent plate boundaries</td>
<td>381–403</td>
</tr>
<tr>
<td>11</td>
<td>Convergent plate boundaries; groundwater</td>
<td>361–403, 461–487</td>
</tr>
<tr>
<td>12</td>
<td>Groundwater and streams; deserts and winds</td>
<td>429–459, 515–535</td>
</tr>
<tr>
<td>13</td>
<td>Test 3; glaciers and glaciations</td>
<td>489–517</td>
</tr>
<tr>
<td>14</td>
<td>Geologic record of global climate change; petroleum geology</td>
<td>575–607</td>
</tr>
</tbody>
</table>

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation
requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

**Academic Integrity**
For additional information please visit: http://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do.”
1. This request is submitted by (department name): Geology & Geophysics

2. Course prefix and number: GEOL 106

3. Texas Common Course Number: GEOL 1304, 1104, 1404

4. Complete course title: Historical Geology

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - □ Communication
   - □ Mathematics
   - □ Life and Physical Sciences
   - □ Language, Philosophy and Culture
   - □ Creative Arts
   - □ American History
   - □ Government/Political Science
   - □ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - □ Yes
   - □ No

8. How frequently will the class be offered? Every fall and spring

9. Number of class sections per semester: 6

10. Number of students per semester: 100

11. Historic annual enrollment for the last three years: 206, 182, 194

   This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by: [Signature] 1/14/13

    Course Instructor

13. Approvals:

    [Signature] 1/14/15

    Date

    Department Head

14. [Signature] 1/17/13

    Date

    College Dean/Designee

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

This course focuses on the physical, chemical, and biologic changes that have taken place on Earth since its formation 4.5 billion years ago. Particular emphasis will be placed on the biosphere and how scientists use the fossil record to help reconstruct Earth’s past. Students will see how the scientific method is applied to reconstruct the past and will have numerous opportunities to engage in geologic inquiry. The scientific method is applied in laboratory exercises to interpret past Earth surface conditions and reconstruct the sequence of events in Earth history.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Critical thinking skills will be emphasized in all graded lab activities. In particular, students will interpret depositional environments based on observations of sedimentary rocks and fossils. Students will analyze radiometric measurements to identify outliers when estimating geologic ages. Students will assess cause-and-effect feedbacks in Earth history using data from the rock record.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Communication skills will be emphasized in all graded lab activities. Students will present Earth history using distance as a metaphor for geologic time. Students will build phylogenetic trees showing the evolutionary relationships among biological lineages. Students will diagram the distribution of time in a stratigraphic cross-section using Wheeler diagrams. Students will display quantitative radiometric age data as scatterplots with all units and quantities clearly labeled.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Students will develop and test interpretations of ancient depositional environments from sedimentary rocks and fossils in the laboratory and in the field. Students will use geologic materials to construct and interpret geologic maps. Students will construct stratigraphic cross-sections based on correlation of geologic successions from multiple locations. Students will construct cladograms depicting the degree of evolutionary relatedness of different organisms.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Students will measure and describe a stratigraphic succession in the field as a group; they will present and defend their interpretation to the class. Students will develop and test competing hypotheses to explain the properties of sedimentary rocks as a group in lab; they will present a scientifically defendable consensus interpretation.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
GEOL 106 SYLLABUS
HISTORICAL GEOLOGY
Fall Semester 2014, Sections XXX-XXX

Professor: Thomas Olszewski  Office Hours: XXX
263 Halbouty Building  XXX
office phone: 845-2465  or by appointment
email: olszewski@geos.tamu.edu

Time and Place: XXX

Course Description and Prerequisites: “Historical Geology. (3-3). Credit 4. Hypotheses of Earth’s origin; age dating of geologic materials; development and history of life; plate tectonic reconstructions, geologic history, and paleogeography, with emphasis on the North American plate. Prerequisites: GEOL 101 or GEOL 104.”

Learning Outcomes
Upon successful completion of this course, students will:
• Scale the timeline of major events in Earth history.
• Reconstruct past continental configurations.
• Interpret past depositional environments using sedimentary rocks and fossils.
• Correlate stratigraphic successions from different locations.
• Translate stratigraphic data into a time framework.
• Calculate radiometric ages.
• Construct and interpret phylogenetic trees.

Core Objectives
Critical Thinking
• Students will interpret depositional environments based on observations of sedimentary rocks and fossils.
• Students will analyze radiometric measurements to identify outliers when estimating geologic ages.
• Students will assess cause-and-effect feedbacks in Earth history using data from the rock record.

Communications Skills
• Students will present Earth history using distance as a metaphor for geologic time.
• Students will build phylogenetic trees showing the evolutionary relationships among biological lineages.
• Students will diagram the distribution of time in a stratigraphic cross-section using Wheeler diagrams.
• Students will display quantitative radiometric age data as scatterplots with all units and quantities clearly labeled.

Empirical and Quantitative Skills
• Students will develop and test interpretations of ancient depositional environments from sedimentary rocks and fossils in the laboratory and in the field.
• Students will use geologic materials to construct and interpret geologic maps.
• Students will construct stratigraphic cross-sections based on correlation of geologic
successions from multiple locations.

- Students will construct cladograms depicting the degree of evolutionary relatedness of different organisms.

Teamwork

- Students will measure and describe a stratigraphic succession in the field as a group; they will present and defend their interpretation to the class.
- Students will develop and test competing hypotheses to explain the properties of sedimentary rocks as a group in lab; they will present a scientifically defendable consensus interpretation.
Textbook and Resource Material:

Grading Policies:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam #1</td>
<td>15%</td>
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<tr>
<td>Exam #2</td>
<td>15%</td>
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<td>Exam #3</td>
<td>15%</td>
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<tr>
<td>Exam #4</td>
<td>15%</td>
</tr>
<tr>
<td>Exam #5 (Final)</td>
<td>15%</td>
</tr>
<tr>
<td>Lab</td>
<td>25%</td>
</tr>
</tbody>
</table>

Letter grades will be assigned on the following scale: A ≥ 90%, B ≥ 80% but < 90%, C ≥ 70% but < 80%, D ≥ 60% but less than 70%, and F < 60%.
Grades will be posted on the course web site: http://elearning.tamu.edu/

Academic Integrity: The Aggie Honor Code states that "An Aggie does not lie, cheat, or steal, or tolerate those who do." For more information, go to http://aggiehonor.tamu.edu

Disability Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Texas A&M University Disability Services located in Room B118 Cain Hall, phone: 845-1637, web address: http://disability.tamu.edu/.

Schedule of Topics
(Subject to change at instructor’s discretion)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Required Reading (page numbers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 Geologic Dating and Timescale</td>
<td>125-150</td>
</tr>
<tr>
<td>Week 2 Origin of the Earth</td>
<td>239-250</td>
</tr>
<tr>
<td>Week 3 Archean Tectonics</td>
<td>250-256</td>
</tr>
<tr>
<td>Week 4 Origin and Evolution of Microbial Life</td>
<td>256-261</td>
</tr>
<tr>
<td>Week 5 Proterozoic Tectonics</td>
<td>266-268, 280-285</td>
</tr>
<tr>
<td>Week 6 Rise of Eukaryotic Life</td>
<td>269-275</td>
</tr>
<tr>
<td>Week 7 Proterozoic Climate</td>
<td>275-280</td>
</tr>
<tr>
<td>Week 8 Precambrian-Cambrian Transition</td>
<td>287-314</td>
</tr>
<tr>
<td>Week 9 Paleozoic Tectonics</td>
<td>314-340</td>
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<tr>
<td>Week 10 Paleozoic Climate</td>
<td>341-372</td>
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<tr>
<td>Week 11 Mesozoic Tectonics</td>
<td>373-402</td>
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<tr>
<td>Week 12 Mesozoic Climate</td>
<td>403-427</td>
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<tr>
<td>Week 13 Cenozoic Tectonics</td>
<td>429-452</td>
</tr>
<tr>
<td>Week 14 Cenozoic Climate</td>
<td>453-493</td>
</tr>
</tbody>
</table>
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Department of Horticultural Sciences

2. Course prefix and number: HORT 201

3. Texas Common Course Number: 1301


5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:

   - Communication
   - Mathematics
   - Life and Physical Sciences
   - Language, Philosophy and Culture
   - Creative Arts
   - American History
   - Government/Political Science
   - Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:

   - Yes
   - No

8. How frequently will the class be offered? Every fall, spring and summer

9. Number of class sections per semester: 1

10. Number of students per semester: 200 to 340

11. Historic annual enrollment for the last three years:

      501  510  556

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by: [Signature]

   Course Instructor

   Date: 1/29/13

14. Department Head

   [Signature]

   Date: 2/8/13

15. College Dean/Designee

   [Signature]

   Date: 2/6/13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at

www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

HORT 201 Horticultural Science and Practices surveys the basic biology of plants (anatomy, morphology, physiology, life cycle), environmental sciences (water, light, temperature, soil, atmosphere, nutrient elements) and biotic factors (pests) that impact the growth, development, productivity and aesthetic value of horticultural crops, e.g. fruits, vegetables and ornamental crops. Each topic begins with fundamental scientific basics, then progresses to the impacts on plants and/or the environment, then the practical applications on horticultural crops.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

How Addressed
Students will develop critical thinking skills through integration of “structure-function” relationships, “cellular physiology-whole plant relationships”, “environment-plant” interactions, or deduction of causal effects from symptomology.

Strategies
Each topic will begin with scientific background, followed by how this relates to environmental and/or biological effects, then practical applications. Examples would be:

- Lectures on water would begin with the physical chemistry of water, such as the principle of heat of vaporization, which will be followed by a lecture on water movement through plants and out of leaves by transpiration. Then the class would dialogue about how this explains why a plant does not overheat in full sun in the middle of a hot August day in Texas. Another example would be to lecture on the light absorption spectrum of chlorophyll and the light emission spectrum of artificial lights, then question the class “What is the best artificial light source under which to grow plants indoors and why?” In addition, this approach is used to promote critical thinking outside of class by simply ending the photosynthesis and respirations lectures with a take-home question such as: “If you went home tonight, put your ficus in a plastic bag, exhaled into the bag, then sealed the bag with a bread twist tie – would the plant’s photosynthesis increase or not?” The next lecture would start with students discussing the answer. This might be followed with a question such as, “Could you do the same thing and make your salad last longer when stored in your refrigerator?” I call these “Food for Thought” questions to stimulate critical thinking both inside and outside the classroom. As the lectures progress through the semester and each new topic builds on and interrelates to the previous topics, the students would be able to critically evaluate how a certain plant STRUCTURE would impact certain plant FUNCTION(S) relative to control of water loss, increase/decrease of photosynthesis, anatomical basis of asexual propagation, hormonal control of growth, crop productivity, etc.
Texas A&M University
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

How evaluated
Each exam will have questions formulated to test for the ability to answer these “Food for thought” type questions.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

How addressed
Active learning is used in almost all lectures, which includes extensive question and answer dialogue with students during the class. Students will be given “Food for Thought” questions at the end of most lectures, and the class will verbalize answers/solutions at the beginning of the next lecture.

Strategies
Students will be given “Food for Thought” questions at the end of most lectures, and we will spend the first few minutes of the next lecture verbally discussing the class answers. Or, questions will be raised during the lecture. Questions about controversial issues will be used to stimulate self reflections then dialogue, such as “We have been cloning plants for centuries without controversy, so why is the recent cloning of animals so controversial?” More often than not, the Food for Thought question would come from a newspaper headline, nightly news or 60 minutes episode on topics such as cloning, climate change, water restrictions, loss of habitat and biodiversity, oil spills, nitrate pollution from agriculture, how will plants repopulate after recent forest fires, etc., especially as these factors relate to the urban and home landscape - the new American farm is your interiorscape and your yard. This is an effective approach to get students to express themselves; the timid student my chime-in on a topic they are passionate about. Also, it applies their education to the real world.

How evaluated
To make sure the student can independently express ideas, exams will be used to test the student’s ability to express concepts, interpretations and personal views in writing. The grade may not be based on whether or not the answer is right or wrong, but rather was the answer to the point, clear and succinct.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

How addressed
In many of the topics, the scientific basis or horticultural application lends itself to quantitative or qualitative analysis. Examples would be, reasoning to diagnose causal abiotic and biotic stress from visual plant symptoms, deduce quantitative responses or induce trends from graphs, or solve fertilizer problems, etc.

Strategies
Students will develop basic empirical and quantitative skills in areas such as physical chemistry and environmental relations and how the heat of vaporization of water is used to determine the degree evaporative cooling by transpiration. Or practical applications, such as mathematically calculating the lowest cost fertilizer per unit nitrogen given the fertilizer analysis and mass of the bagged fertilizer. Students also will use reasoning to identify nutrient deficiencies from visual symptomology. Many of the relationships are presented in graphic form, thus the students learn how to read and interpret graphs. For example, students will use graphs to determine the light compensation point from plots of photosynthesis and respiration rates, and graphically observe how the light compensation point decreases as plants acclimate to low light interior environments.

How evaluated
Exam questions will be formulated to test the students ability solve problems, reason cause and effect, and interpret trends from graphs.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

How addressed
The major pedagogical tool used in lecture is active learning, including active learning exercises with students. Food for Thought questions will be used to stimulate small groups discussions.

Strategies
Students will participate as groups in “active learning” exercises, such as using students to act-out electron and light capture by chlorophyll and resultant ATP synthesis in the electron transport chain of the light reaction of photosynthesis. “Think-Pair Share” or “Think-Group Share” will be used for active class participation on many topics.

How evaluated
I always formulate a question that can only be answered if one participated in or paid attention to the active learning exercise. This assures knowledge was gained from the activity.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
COURSE DESCRIPTION AND PREREQUISITES
Survey of the basic biology of plants (anatomy, morphology, physiology, life cycle), environmental sciences (water, light, temperature, soil, atmosphere, nutrient elements) and biotic factors (pests) that impact the growth, development, productivity and aesthetic value of horticultural crops, e.g. fruits, vegetables and ornamental crops. Each topic begins with fundamental scientific basics, then progresses to the impacts on plants and/or the environment, then the practical applications on horticultural crops. Prerequisites: none

LEARNING OUTCOMES AND COURSE OBJECTIVES
Subject Matter Based
- Students will recognize plant "architecture" or "structure" as determined by outer morphology and internal anatomy.
- Students will develop a basic knowledge of plant "function", with a focus on the fundamental principles of photosynthesis, respiration and hormones.
- Students will master fundamental physical and chemical basis of the environmental variables of light, temperature, water, soil, atmosphere, mineral nutrition and how these effect plant growth.
- Students will develop practical skills to "orchestrate" plant growth with hormones, pruning, nutrition, irrigation, manipulation of atmospheric gases and soil modification.

Required Elements
- Critical Thinking: Students will develop critical thinking skills through integration of "structure-function" relationships, "cellular physiology-whole plant relationships", "environment-plant" interactions, or deduction of causal effects from symptomology.
- Empirical and Quantitative Skills: Students will develop basic empirical and quantitative skills in areas such as heat of vaporization and environmental cooling, photosynthetically active radiation (PAR) and plant acclimation to low light, fertilizer analysis and computation of most economical costs, etc.
- Communication Skills: Students will be given "Food for Thought" questions at the end of most lectures, and will verbalize answers/solutions at the beginning of the next lecture, and students will express their understanding of the course concepts in writing.
- Teamwork: Students will participate as groups in "active learning" exercises, such as using students to act-out electron and light capture by chlorophyll and resultant ATP synthesis in the electron transport chain of the light reaction of photosynthesis. "Think-Pair Share" or "Think-Group Share"
will be used for active class participation on many topics.

- **Personal Responsibility:** Some “Food for Thought” questions posed during lecture or at the end of each lecture will be on topics such as ethical views of genetic engineering and GMOs, and cloning of animals versus cloning of plants; one’s carbon footprint relative to climate change and the greenhouse effect; diminishing water supplies and one’s reaction to water restriction, etc. Students will be asked to contemplate their personal responsibility relative to these issues.

- **Social Responsibility:** Some “Food for Thought” questions posed during lecture or at the end of each lecture will be on topics such as climate change and our social responsibility, society’s acceptance of GMOs and the economic consequences, etc., and contemplate one’s social and political responsibilities relative to these controversial topics.

**TEXTBOOK AND RESOURCE MATERIAL**

Web site: hort201.tamu.edu

**GRADING**

**Exams and weights**
100 points Exam 1 (inclusive)
100 points Exam 2 (inclusive)
100 points Exam 3 (inclusive)
100 points Exam 4 (inclusive)
100 points Final Exam (comprehensive)

**Grading Scale**
10 point scale: A = 90-100, B = 80-89, C = 70-79, D = 60-69, F <= 59

**Grade Calculation**
- Drop lowest grade of the five (5) exams
- Therefore, your grade is based on a total of 400 points
- Numerical grade: mathematical average of highest 4 exam grades, rounded to next whole number
- Letter grade: letter grade equivalent (see Grading Scale) of your mathematical average; there is no curve on final grades or outside/extra work for extra credit.

**EXAM DATES:** Exam Dates are posted on the course web site.

**MAKE-UP EXAMS:**
All absences and make-up polices are based on Student Rules (http://student-rules.tamu.edu/). Make-up exams will be given only for acceptable University excuses as per Student Rule: "The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for absence", which requires some type of written and approved excuse. And, "to be excused the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident, or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class." Email is sufficient for notification of an absence, but it is strongly advised that you talk to me directly (in person or a phone call) to inform me of the absence - Why? So I can confirm the validity of the absence and explain your options relative to timing of the make-up exam. If possible, the make-up exam will be tentatively scheduled at the time I verify the excused absence. Arrangements for make-up exams must be done directly (in person or a phone call) - I do not discuss arranging make-up exams via email, texting, leaving voice mails, or other electronic means, unless it is an extraordinary situation. Student Rules require that the make-up is "to be completed within 30 calendar days form the last day of the absence". However, the exact time allowed
for the make-up depends on the nature of the excused absence. My guidelines are: The student is given
the number of days to make up the exam equal to the number of days of the excused absence, starting
with the day of the exam, and the make-up exam must be taken by the end of the next working day. For
example, if the student has an illness and an excused absence for 2 days (the day of the exam plus the
next day), then the student is allowed two (2) calendar days, and the make-up exam must be taken by the
end of the 3rd day (or next working day, if the 3rd day falls on a weekend or holiday). If the excused
absence includes days before the exam such that lectures were missed, then see the instructor for a case-
by-case decision to allow sufficient time to view the videos of the missed lectures. If the excused
absence is for a planned event, such as sponsored activity, and no lectures are missed, then the student
may take the exam before departure if feasible, or a proctored exam may be administered on the trip, or
the exam is taken by the end of the day after return; if the absence causes lectures to be missed, an
appropriate amount of time will be allowed for the student to view the video tapes of the lectures missed,
plus study time - this is arranged on a case-by-case basis. Notification of missing an exam must by the
timeline stated above, but written documentation of the excused absence can be turned-in at the time of
the make-up exam. If the make-up exam is taken after the graded exams have been returned in class,
then a different, but comparable, make-up exam will be given. Any exam missed without following the
Student Rules will result in a grade of 0 (unless there are extraordinary extenuating circumstances, and
in such cases you must appeal directly to the instructor). If this is your first 0, then it will automatically
be used as your drop grade. If you have already used your drop grade, then the 0 will be averaged as a
grade. If all this seems confusing, that is why I want you to call me so I can verify your excuse and
explain to you the make-up options.

OTHER PERTINENT COURSE INFORMATION

VIDEO TAPE OF LECTURES:
Every lecture will be digitally videotaped. DVDs of each lecture are placed on 2-hour reserve in the
West Campus Library Reserve Desk. The DVDs can be viewed on any computer in any of the student
computer labs. The Library may post lectures on Media Matrix.

LATE ARRIVALS AND DEPARTURES:
Lecture: I realize A&M is a very large campus. Therefore, late arrivals and early departures will be
tolerated within reason (a few minutes). Enter/exit quietly and sit towards the back of the class.
However, lecture will start and end on time.
Exams: Late arrivals are not tolerated for exams; after the first student finishes and leaves the room then
no other students are allowed in the room to take the exam, unless there is a reasonable and
extraordinary reason for arriving late and it can be verified.

CELLULAR PHONES:
If your cell phone or beeper rings during class repeatedly or if you answer a phone that was on vibrate,
you may be asked to leave the classroom.

ATTENDANCE:
I do not take roll, but please make an effort to attend all lectures.

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Number</th>
<th>Horticulture Science and Practices, Red</th>
<th>The Biology of Horticulture, Preece and Read</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>Lectures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>pages 1-2</td>
<td>Chapter 1</td>
<td>Introduction and Definition of Horticulture</td>
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</table>
| 3      | pages 3-20                               | Chapter 3                                   | Plant Anatomy, Morphology & Development
<pre><code>                                           |                                             | Vegetative &amp; Reproductive                 |
</code></pre>
<table>
<thead>
<tr>
<th>EXAM</th>
<th>PARTS</th>
<th>pages</th>
<th>Chapters</th>
<th>Topics</th>
</tr>
</thead>
</table>
| 1st EXAM   | II    | 30-52| 11,17    | Hormones and Growth Substances: Natural and synthetic hormones (growth substances), sites of synthesis, translocation, manipulating plant growth and development with hormones, practical applications.
|            |       |      |          | Light: Properties of radiation, Photosynthetically Active Radiation (PAR), Effects of Light Quantity & Quality on plants, Light Measurement, Light Compensation Point, Photoperiodic, Light Acclimatization |
|            |       |      | 8,10     | Soil & Growing Medium: Soil Types and Components, Chemistry and Physical Properties, Artificial Soil; Growing Medium amendments and Recipes. |
|            |       | 74-80| 9        | Nutrition and Fertilizers: Essential Elements, Functions, Deficiency Symptoms, Fertilizer Analysis, Calculation of fertilizer rates and costs, Fertilizer Sources. |
| 3rd EXAM   | III   | 81-93| 4,14     | Propagation: Sexual propagation by Seeds; Life Cycle of Plants, Asexual reproduction (cloning) by Cuttings, Layering, and Grafting; Chimens. |
|            |       | 94-96| 13       | Growth Control: Pruning, wound healing, Pruning Methods and Terminology, Chemical Pruning, Timing of Pruning. |
|            |       | 97-100| 16     | Pest and Pest Control: Pest Control, Integrated Pest Management (IPM), Biological Control, Pest Types -Insects, Mites, Disease Causing Microbes, Weeds |
| 4th EXAM   |       |      |          | Americans with Disabilities Act (ADA): The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu |
|            |       |      |          | Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu |
|            |       |      |          | "An Aggie does not lie, cheat, or steal, or tolerate those who do." |
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Horticultural Sciences

2. Course prefix and number: Hort 202

3. Texas Common Course Number: 1401


5. Semester credit hours: 1 cr hr

6. This request is for consideration in the following Foundational Component Area:
   - Communication
   - Mathematics
   - Life and Physical Sciences
   - Language, Philosophy and Culture
   - Creative Arts
   - American History
   - Government/Political Science
   - Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - Yes
   - No

8. How frequently will the class be offered? Fall and Spring

9. Number of class sections per semester: 5

10. Number of students per semester: 90

11. Historic annual enrollment for the last three years: 180 180 180

12. This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:
   
   Course Instructor
   
   Approvals:
   
   Department Head
   
   College Dean/Designee

14. Date

15. Date

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Horticultural Science and Practices Lab is designed to provide a broad understanding of Horticulture through basic and applied science. This is achieved through weekly applied laboratory exercises that emphasize teamwork in creating and interpreting qualitative and/or quantitative data sets, and the synthesis of underlying basic science concepts that drive everyday natural plant phenomena reported in group discussion, along with observation and discussion of specimens and technique in the class and on field trips, and individually prepared written in-depth analysis of team-collected experimental results.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

1. Students will individually prepare a notebook-format journal, consisting of datasets collected in class. Higher order thinking will be required to answer question sets posed about the experiment at hand and its scientific and sometimes social implications.
2. Student-generated dichotomous keys are used to identify a finite set of plants to develop higher order thinking skills and to help in understanding and retention of biological terminology. Traditional floral keys are also used.
3. In an individual activity, students must synthesize the information at hand to determine the most appropriate technique to apply to student-selected ‘attractive’ plant materials, and subsequently evaluate the results of their decisions at the termination of the experiment. Students are often motivated to pick the most appropriate techniques, since successfully cloned plant materials go home with the students.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

1. Student groups are required to post data for class consumption with immediate feedback on format and missing/faulty information.
2. Subjective evaluations of mid-experiment results are often presented to the class orally by groups or individuals.
3. Demonstrations of grafting, layering and division serve as a basis of understanding of plant morphology and require explanations in end-of-semester reports.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):
Texas A&M University
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

1. Students learn to calculate fertilizer concentrations in class and have graded problem sets.
2. Students learn Metric and Standard systems interconversions with problem sets
3. Results of the experimental application of increasing fertilizers concentration on plants acts as a platform for scientific inquiry and a subsequent discussion of social responsibility in application of agricultural chemicals.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Student teams of 2-6 in class:
1. Begin plant experiments (>10 occurrences) by planting transplants, seeds, propagules
2. Harvest experiments, measure quantitative variables (height, weight, branching vigor) and record and share datasets (>10 occurrences)
3. Develop unique keys to identify a finite set of plants and use standard keys to identify species, variety, & cultivar
3. Measure plant photosynthetic light levels that become variables in plant experimental treatments.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
HORTICULTURAL SCIENCE AND PRACTICES LABORATORY

HORT 202

COURSE POLICY AND SYLLABUS

SPRING 2013

Mr. Matthew W Kent

Lab Hours:
Monday sec 501: 2:00pm - 4:50pm
Tuesday sec 502: 12:45pm - 3:35pm
Wednesday sec 503: 9:10am - 12:00pm
Wednesday sec 504: 2:00pm - 4:50 pm
Thursday sec 505: 12:45pm - 3:35pm

All lab sections are held in HFSB 112

Course Objectives (Learning Outcomes)

Horticultural Science and Practices Lab is designed to provide a broad understanding of Horticulture through basic and applied science. This is achieved through weekly quizzes over concepts, applied laboratory exercises that emphasize teamwork in creating and interpreting qualitative and quantitative data and synthesis of underlying concepts in group discussion, observation and discussion of specimens and technique on field trips, and written individually prepared in-depth analysis of team-collected experimental results.

- Botany
  - Learn scientific terminology to describe plant structures
  - Understand basic taxonomic relationships of plants

- Plant Biochemistry & Physiology
  - Understand the basic phenology of plant materials and the scientific means to manipulate the underlying plant physiology for practical purposes
  - Application of chemical growth regulators to illustrate the junction of biochemistry and economic horticulture
  - Introduction to plant essential elements
  - Experimentation with fertilizer application levels as a means of demonstrating physiological response, and as a platform for the discussion of environmental responsibility

- Soil Science
  - Provide a working knowledge of basic soil components
  - Introduction to soil conservation and use of sustainable materials for plant husbandry
  - Understanding of introductory soil chemistry and its impact on plant growth

- Entomology
  - Understanding of basic economic entomology of horticultural crops
  - Rediscovery of the utility of scientific terminology, as applied to insects

- Horticuture
  - Basic understanding of asexual and sexual plant propagation techniques
  - Basic understanding of the care of landscape plant materials
  - Introduction to basic Horticatural mathematical calculations

Prerequisite: HORT 201 or registration therein.

Required Text
General Horticulture Laboratory Manual; Second Edition; David Wm. Reed
ISBN 0-8087-9470-1
### Instructor Information

<table>
<thead>
<tr>
<th>Matthew Kent, Lecturer</th>
<th>Tulle Alexander, TA</th>
<th>Paige Graves, TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues, 12:45pm</td>
<td>Mon, 2:00pm</td>
<td>Wed, 9:10am</td>
</tr>
<tr>
<td>Wed, 2:00pm</td>
<td>Thur, 12:45pm</td>
<td></td>
</tr>
<tr>
<td>HFSB 407 (office)</td>
<td>HFSB 517 (office)</td>
<td>HFSB 418 (office)</td>
</tr>
<tr>
<td>HFSB 403 (lab)</td>
<td>HFSB 502 (lab)</td>
<td>HFSB 402 (lab)</td>
</tr>
<tr>
<td>845-4528 (lab)</td>
<td>845-0135 (lab)</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:mkent@tamu.edu">mkent@tamu.edu</a></td>
<td><a href="mailto:tulle5586@neo.tamu.edu">tulle5586@neo.tamu.edu</a></td>
<td><a href="mailto:paige_p_08@neo.tamu.edu">paige_p_08@neo.tamu.edu</a></td>
</tr>
</tbody>
</table>

### Office Hours

Each instructor will inform you of his/her office hours during lab. If you need one of us, phone and office numbers as well as e-mail addresses are provided above.

### Attendance and Make-up Labs

- Attendance is mandatory and you must attend each lab in its entirety. A late arrival (after the quiz is over) and/or early departure (before the entire class is dismissed) will result in a zero on the weekly quiz.
- We realize that emergencies may prevent you from attending lab. If this occurs, you are allowed to attend another lab section. However, you must get permission from both your instructor and the instructor who teaches the lab you wish to attend in advance.
- All make-up labs must occur the same week as the missed lab. It is not possible to make up a lab after the missed week, whether the absence is excused or unexcused, due to the changing lab setup.
- Make-up labs are only allowed for university acceptable excuses or with permission of the instructor. Excused absences are defined in the Student Rules (see http://student-rules.tamu.edu/rule7.htm). Labs change every week, so make-up labs can only occur during the week they are missed. If a missed lab cannot be made up during that week, your quiz grade for that week will be a 0.
- You may only miss 3 labs. If you have 4 or more excused absences, you will receive a grade of “I” (Incomplete). If the majority of your absences (3) are unexcused, you will receive a grade of “F” in the course.

### Grading

HORT 202 is a separate course from HORT 201 and will have a separate 1 hour grade. Grades are determined as follows:

- Weekly quiz grades = 50%
- Lab report = 50%

#### A. Weekly Quizzes:

Weekly quizzes will be given. You will be allowed to drop a maximum of 2 quizzes, with your grade being determined from a minimum of 9 quizzes. Each quiz will be worth 10 points. 80% or 8 points of each quiz will be based on the previous week’s lab material. 20% or 2 points of each quiz will be based on the current week’s lab material. Therefore, you are required to read each week’s lab material BEFORE coming to class. Each quiz will be 10 minutes long and start 5 minutes after class time. If you arrive while a quiz is in progress, you may take the quiz but you must complete it by the standard completion time (i.e., you will not be given an extension). If you arrive after the quiz has been completed, you will receive a grade of 0 for that quiz. Any student departing from lab early will have his/her quiz invalidated (a grade of 0) and will be considered absent for that lab. Clarification: This policy dictates that there will be no make-up quizzes given whether the absence is excused or unexcused. Two quiz grades will be dropped to compensate.

#### B. Lab Report:

- We will be conducting a series of lab exercises throughout the semester. Most exercises will produce data. Your lab report grade will be based on data collected and questions answered about each exercise. Data will be collected as a group and shared in class. If you are absent, you are responsible for obtaining missing data from the TA.
- Answers to questions in your lab report must be your own and may not be shared.
- You are not allowed to work in groups to develop answers to the questions. Any duplicated/plagiarized answers that are found between lab reports will be considered academic misconduct. If it is determined that you worked with others in developing answers, this will be handled as academic misconduct (see http://www.tamu.edu/aggiehonor)
- If physical assistance is needed to fill out the lab report due to a temporary disability (I can’t fill out my lab exercises by myself because my wrist is broken!), permission must be requested from the instructor.
- Lab reports will be due as experiments are finished. These will occur throughout the semester, however, a large number of these will occur towards the end of the semester. For lab reports turned in after the due date, the grade for that report will be reduced by 10% per day late.
**Americans with Disabilities Act (ADA) Policy Statement**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information, visit http://disability.tamu.edu.

**Copyrights**
Please note that all handouts and supplements used in this course are copyrighted. This includes all materials generated for this class, including but not limited to syllabi, exams, in-class materials, review sheets, and lecture outlines. Materials may be downloaded or photocopied for personal use only, and may not be given or sold to other individuals.

**Academic Integrity Statement and Policy**
No form of academic misconduct will be tolerated in HORT 202 lab. Be aware that copying answers during lab quizzes, any copied or plagiarized answers, or any answers developed in discussion with others in lab reports are forms of academic misconduct. Please refer to Student Rules (http://student-rules.tamu.edu/) and the Honor Council Rules and Procedures (http://www.tamu.edu/aggiehonor). It is the student’s duty to read, understand and comply with these policies.

"An Aggie does not lie, cheat or steal, or tolerate those who do."

**Hazardous Materials Statement**
Do not perform any procedure until all risks are understood and all actions can be performed in a safe, informed manner. When in doubt, ask for help.

- Hazards in the Hort 202 laboratory include:
  - **Chemicals**
    - fertilizer solutions (Lab 10)
    - plant growth regulators (Lab 6)
    - rooting compounds (Lab 8)
    - cleaning solutions (Lab 9)
    - concentrated sulfuric acid (Lab 9)
    - Chemicals will be handled with gloves, and with protective clothing when appropriate. Students will be strictly monitored. Any improper exposure to these chemicals should be reported to the instructor immediately.
  - **Air-borne Irritants (Labs 4-10)**
    - perlite
    - vermiculite
    - Particulate masks will be issued to students when appropriate. Students with respiratory problems may be exempt from primary contact with these components with a doctor’s excuse, or by permission of the instructor.
  - **Mechanical Hazards (Lab 8 & 9)**
    - The use of sharp instruments in lab is required, and students should exercise caution. The best way to avoid injury is to proceed slowly and follow instructions.
**Syllabus**

Your lab book is divided into sections: Laboratory 1 through Laboratory 14. We will cover 1 laboratory section per week, except week 4. We will be covering these laboratory sections in the order presented in the notebook, except the final two labs, which are switched. A tentative schedule follows:

<table>
<thead>
<tr>
<th>Calendar Week</th>
<th>Laboratory Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1, Jan 14-17</td>
<td>Lab 1, Orientation to the Laboratory</td>
</tr>
<tr>
<td>Week 2, Jan 21-24</td>
<td>Lab 2, Recognition of Plant Structures</td>
</tr>
<tr>
<td>Week 3, Jan 28-31</td>
<td>Lab 3, Plant Identification &amp; Taxonomy</td>
</tr>
<tr>
<td>Week 4, Feb 4-7</td>
<td>Lab 4 &amp; 5, Temperature &amp; Light</td>
</tr>
<tr>
<td>Week 5, Feb 11-14</td>
<td>Lab 6, Growth Control</td>
</tr>
<tr>
<td>Week 6, Feb 18-21</td>
<td>Lab 7, Growing Media &amp; Soils</td>
</tr>
<tr>
<td>Week 7, Feb 25-28</td>
<td>Lab 8, Asexual Propagation</td>
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<tr>
<td>Week 8, Mar 4-7</td>
<td>Lab 9, Sexual Propagation</td>
</tr>
<tr>
<td>Week 9, Mar 11-14</td>
<td>Spring Break</td>
</tr>
<tr>
<td>Week 10, Mar 18-21</td>
<td>Lab 10, Nutrition &amp; Fertilizers</td>
</tr>
<tr>
<td>Week 11, Mar 25-28</td>
<td>Lab 11, Pest Identification &amp; Control</td>
</tr>
<tr>
<td>Week 12, Apr 1-4</td>
<td>Lab 12, Landscape Plants (field trip)</td>
</tr>
<tr>
<td>Week 13, Apr 8-11</td>
<td>Lab 14, Overview of Turfgrasses (field trip)</td>
</tr>
<tr>
<td>Week 14, Apr 15-18</td>
<td>Lab 13, Overview of Vegetables and Gardening (field trip)</td>
</tr>
<tr>
<td>Week 15, Apr 22-25</td>
<td>Help Week, Remaining Lab Reports Due</td>
</tr>
</tbody>
</table>
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Oceanography

2. Course prefix and number: OCNG 251 3. Texas Common Course Number: GEOL 1345

4. Complete course title: Oceanography 5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:
   ☐ Communication  ☐ Creative Arts
   ☐ Mathematics  ☐ American History
   ☒ Life and Physical Sciences  ☐ Government/Political Science
   ☐ Language, Philosophy and Culture  ☐ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   ☐ Yes  ☒ No

8. How frequently will the class be offered? every semester

9. Number of class sections per semester: 12 to 15 in Fall/Spring; 1 during summer

10. Number of students per semester: 790 to 1010 in Fall/Spring; 30 to 100 during summer

11. Historic annual enrollment for the last three years: 2011/12: 1760 2010/11: 1632 2010/09: 1560

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:
   Course Instructor: MARY JO RICHARDSON
   Approvals:

14. Department Head: PIERS CHAMIN

15. College Dean/Designee

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thech.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The ocean covers 71% of the Earth’s surface and therefore directly or indirectly affects most processes in the Earth System, including human activities. OCNG 251 Oceanography focuses on describing and explaining the major features and processes that occur in the ocean and how they interact with other components of the Earth System. For example, ocean currents help us to understand how heat energy is transferred from low to high latitudes, affecting global climate. A better understanding of the role of the oceans in the Earth system will help students become informed citizens capable of understanding environmental issues of societal importance, such as climate change and sea level rise. Information will be presented within the context of the scientific method. For example, the theory of plate tectonics will be presented to not only illustrate how this process has shaped the ocean basins, but also to illustrate how hypotheses develop and are tested, and how a theory is based on many empirical observations and types of evidence. Oceanography is an interdisciplinary and quantitative science; a goal of OCNG 251 is to integrate and synthesize knowledge and fundamental concepts from across the life and physical sciences to better understand the ocean.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Critical thinking is integrated into the learning outcomes of OCNG 251 Oceanography. Students will be expected to use critical thinking to synthesize knowledge and concepts from several scientific disciplines to enable them to describe and explain processes in the ocean. Critical thinking will be tested during class as students will be expected to analyze, evaluate and interpret information (such as graphs, maps, diagrams, or table of data) while working in small teams and then communicate their findings to the rest of the class. Critical thinking will also be tested in four exams that take place during the semester.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students will be required to communicate through writing and verbally to meet the learning outcomes of OCNG 251 Oceanography. Students will communicate their knowledge and the results of their critical thinking in writing during exams. During class, students will work in teams to analyze and evaluate information and they will communicate their results verbally to the rest of the class. In addition, informal discussions during class will develop students’ rhetorical skills.
Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Empirical and quantitative skills are developed during OCNG 251. They are required to meet the learning objectives of the course and develop students’ understanding and application of the scientific method. Students will analyze and interpret data over a range of temporal and spatial scales. For example, an understanding of water properties and how they affect ocean circulation requires an integration of spatial scales from molecular to global. Students will analyze empirical data, such as changes in the fundamental oceanographic properties of seawater with depth. Students will use quantitative data to learn fundamental concepts by producing and interpreting graphical representations, make calculations and draw conclusions or make predictions based on their analysis.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Teamwork is an important element of modern science as major scientific problems are rarely solved by individual researchers. This is particularly true within the field of oceanography, which integrates physics, chemistry, geology, and biology to understand the ocean. OCNG 251 will address the teamwork core objective through group activities designed to meet the learning outcomes of the course. Students will work in small teams to analyze, evaluate, or interpret information at least every other class. In addition to taking the exams individually, students will take the exam in small teams which will develop communication and analytical skills in a group setting.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number: Oceanography: OCNG 251 (3-0, CR 3)
Term: Fall 2014
Meeting times and location: TR 11:10 AM – 12:25 PM; O&M Bldg. room 112

Course Description and Prerequisites
Overview of the ocean environment; interrelation of the sub-disciplines of ocean sciences; importance of the ocean to human beings; human impact on the oceans.

Prerequisite: Concurrent registration in OCNG 252 is recommended but not required. Topics learned in lecture are reinforced in the laboratory course OCNG 252.

Course Objectives and Learning Outcomes

Course Objectives:

- Understand scientific principles and concepts of Oceanography.
- Foster appreciation for the complexity of the Earth and its oceans.
- Develop understanding of the oceans' role in and importance to the Earth's environment.
- Encourage informed action as citizens of the planet responsible to future generations.

Learning Outcomes:

- Identify reasons why sustainable practices regarding ocean resources (e.g. fisheries, hydrocarbons) are important and affect students' present and future life and the world economy;
- Demonstrate how the oceans are connected to and drive major Earth processes, such as atmospheric and oceanic circulation, climate and weather, plate tectonics, and sustainability of human and marine populations
- Discuss the importance of oceanography in global initiatives and political decisions for the present and future.
- Explain the theory of plate tectonics and its relationship to the formation of major features of the seafloor.
- Describe the principles involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems
- Analyze atmospheric and oceanic circulation systems, their interconnections and driving forces.
- Summarize the major physical and chemical properties of seawater and how each affects marine life.
- Explain the relationship between producers and consumers in the ocean and how they affect the cycling of carbon among the ocean, atmosphere and sediments.
- Identify the consequences of a rise in sea-level on the coastal zone and society and possible mitigation and adaptation strategies.

Instructor Information

Name: Dr. Mary Jo Richardson, Regents' Professor  
Telephone number: 979-845-7966  
Email address: richardson@ocean.tamu.edu  
Office hours: Tuesday, Wednesday, Thursday 8:30 AM – 9:30 AM or by appointment.  
Office location: O&M 306C

Textbook and/or Resource Material


Essentials of Oceanography is required. Used copies are available. A three-hole punched version is available. Copies are available at the library. Additional materials may be assigned in class and will be made available on elearning.

Grading Policies

Exams:
There will be four exams in class. There is no final exam. Each exam will cover all material and chapters listed in the course outline since the previous exam and any current events related to the course. Knowledge of basic concepts covered previously will be assumed. Exams may include multiple choice and short answer questions. Exam material will come from class presentations, readings and assignments.

Notes, calculators, phones, or other electronic devices will not be allowed during exams. Exams will be given twice in the exam period. During the first 50 minutes everyone will take the exam individually. During the next 25 minutes you will take the exam in groups of 5. I will assign groups before the first exam. The group exam grade will be weighted by your attendance for each segment of the course to determine your total points earned for each exam. I will provide the Scantrons for the exams.

Make-up exams policy:
It is your responsibility to contact me in person with your university authorized absence to be allowed to take a make-up exam. Make-up exams will be given within 1-2 weeks following each exam. Make-up exams will be essay format.

Attendance and participation:
Regular attendance and participation in class is necessary and will be used in determining the weighting factor used for the group exams in calculation of the total points earned.

Clickers:
Clickers will be provided for in-class use and will be used for attendance and accessing understanding. The department clickers are used in multiple classes. You will be assigned a
numbered clicker that you will use during class. Please return your clicker to its proper slot at the end of class. Loss of your clicker will result in a fee of $100 added to your student account.

Extra Credit:
Your lowest exam grade will count least – 19% versus 27% for your highest 3 exam grades. No additional extra credit will be given. Focus your efforts on attending class and learning the class material.

Exam grades will be posted on eLearning.tamu.edu.

Exams: Four exams (combined points for individual and group exams) – 100 pts each - total of 400 pts

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>A</td>
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<tr>
<td>B</td>
<td>320-359</td>
</tr>
<tr>
<td>C</td>
<td>280-319</td>
</tr>
<tr>
<td>D</td>
<td>240-279</td>
</tr>
<tr>
<td>F</td>
<td>&lt;240</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Cell phones, mp3-players, and other e-devices must be turned off during class. Computers are only allowed with web access turned off (airplane mode). Should you need to use an e-device for emergency purposed during class, be respectful – excuse yourself from the class and return when the emergency is over. Disrespectful students will be asked to leave class.

I encourage you to come see me during my office hours early in the semester if you have any questions about the course. Please do not wait until the end of the semester when much of your grade in the course is already earned.

Americans with Disabilities Act (ADA)

“The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Services in Room B118 of Cain Hall. The phone number is 845-1637.” For additional information visit http://disability.tamu.edu

Honor Code


For additional information please visit: http://aggiehonor.tamu.edu/

Copyright Notice

“All materials used in this course are copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless permission is expressly granted.’
**Plagiarism Statement**

"As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated". If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, http://student-rules.tamu.edu, under the section "Scholastic Dishonesty."

**Course Outline**

Class topics and exam dates may change. Notice of exam date changes will be announced in class and posted on eLearning.tamu.edu.

<table>
<thead>
<tr>
<th>Week</th>
<th>Chapter Title/Topic</th>
<th>Text Reading (Chapters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction/Overview/Current topics</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Introduction to Planet “Earth”</td>
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<tr>
<td></td>
<td>Plate Tectonics and the Ocean Floor</td>
<td>2</td>
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<tr>
<td></td>
<td>Marine Provinces</td>
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<td>Week 2</td>
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<td>Week 3</td>
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<td>Week 4 - Tuesday</td>
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<td>EXAM 1</td>
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<tr>
<td></td>
<td>Marine Sediment</td>
<td>4</td>
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<td>Water and Seawater</td>
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<td>Air-Sea Interaction/Climate</td>
<td>6 &amp; 16</td>
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<td>Week 7 - Tuesday</td>
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<td>EXAM 2</td>
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<td>Ocean Circulation</td>
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<td>Waves and Water Dynamics</td>
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<td>Tides</td>
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<td>Coast: Beaches and Shoreline Processes</td>
<td>10</td>
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<td>The Coastal Ocean</td>
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<td>Week 7</td>
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<td>Week 11 - Tuesday</td>
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<td>EXAM 3</td>
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<td></td>
<td>Marine Life and the Marine Environment</td>
<td>12</td>
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<td>Biological Productivity and Energy Transfer</td>
<td>13</td>
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<td>Animals of the Pelagic Environment</td>
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<td>Animals of the Benthic Environment</td>
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<td>Week 14</td>
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<td>EXAM 4</td>
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<td>International oceanographic expeditions</td>
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</table>
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Oceanography

2. Course prefix and number: OCNG 252

3. Texas Common Course Number: GEOL 1145

4. Complete course title: Oceanography Laboratory

5. Semester credit hours: 1

6. This request is for consideration in the following Foundational Component Area:
   ☐ Communication  ☐ Creative Arts
   ☐ Mathematics   ☐ American History
   ☒ Life and Physical Sciences ☐ Government/Political Science
   ☐ Language, Philosophy and Culture ☐ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   ☐ Yes  ☒ No

8. How frequently will the class be offered? every semester

9. Number of class sections per semester: 41 to 45 in Fall/Spring; 4 during summer

10. Number of students per semester: 610 to 900 in Fall/Spring; 80 during summer


This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:
   
   Course Instructor: [Signature] Shari A. Vondran

   Approvals: [Signature]  

   Department Head: [Signature] Piers Chapman

   College Dean/Designee: [Signature]  

13. Date: 2/5/13

14. Date: 2/5/13

15. Date: 2/7/13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The ocean covers 71% of the Earth’s surface and therefore directly or indirectly affects most processes in the Earth System, including human activities. OCNG 252 Oceanography Laboratory will introduce students to fundamental concepts in the geosciences. Students will apply the scientific method to solve oceanography problems in a laboratory setting. Through a series of practical experiments, students will be able to describe and explain several phenomena relating to the geology, physics, chemistry, and biology of the ocean. For example, students will investigate how physical factors interact to affect the density of seawater and using this knowledge they will be able to predict how temperature and salinity changes affect seawater density, stratification, and ocean currents.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include: creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Students will employ critical thinking to successfully complete the laboratory experiments that are the foundation of this class. For example, students will use critical thinking to evaluate the quality (e.g. accuracy and precision) of the data they collect. Critical thinking and application of the scientific method will be required to interpret and use the data for the calculations, evaluations, and predictions required for answers in their lab reports. Several of the learning outcomes of OCNG 252 require students to think critically.

Communication (to include: effective development, interpretation and expression of ideas through written, oral and visual communication):

Students will develop written, visual, and verbal communication skills. Students will use written and visual communication as text and graphs to communicate the results of the laboratory experiments in their lab reports. Verbal communication is necessary to successfully complete the laboratory experiments as the students will work in pairs or small teams.

Empirical and Quantitative Skills (to include: the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Empirical and quantitative skills are integrated into the learning outcomes for OCNG 252. Students will collect empirical data during the laboratory experiments. They will manipulate these data and make calculations to present and interpret their results. The manipulation of quantitative data will be required to explain the solutions to oceanographic problems and to enable the students to think critically and make predictions about how that experimental system would behave under different conditions.
Texas A&M University
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Teamwork is essential to meet the learning outcomes of OCNG 252. Students will work in pairs or small groups of four students during the laboratory experiments. To successfully complete each experiment students will have to be able to collaborate, communicate, and organize with the other members of their group.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number: OCNG 252 Section 501
Term: Fall 2014
Meeting times and location: Room 208, 10:00-12:00 Monday

Course Description and Prerequisites

This course is a lab based introduction to oceanography topics. There are no prerequisites for this course, but a general understanding of basic math is needed and some familiarity with Microsoft Excel is useful. While this class complements the oceanography 251 lecture course, OCNG 251 and 252 do NOT need to be at the same time. OCNG 252 may be taken as a standalone course.

Learning Outcomes

After successfully completing the Introduction to Oceanography lab, students will be able to:

1) Describe the bathymetric variability of the seafloor and how to contour it.
2) Discuss the deposition and transport of sediments in the ocean.
3) Evaluate the different methods for determining salinity and assess which method is more accurate and precise.
4) Investigate how physical factors affect seawater density through experimentation.
5) Describe how density is determined and the role it plays in ocean circulation.
6) Give examples of how climate change impacts the ocean.
7) Describe how waves travel through the water.
8) Describe the effects of seasonal variability on the surface ocean and the organisms in it.
9) Manage and organize laboratory experiments as part of a pair or group of peers.

Core Objectives

Students will develop critical thinking skills, communication skills, empirical and quantitative skills and teamwork throughout the semester through the following activities:

- Students demonstrate teamwork each week as they work in pairs or groups of four to make the necessary measurements for each lab.
- They develop empirical and quantitative skills as they individually perform calculations to answer the problems assigned for the lab.
- Students hone critical thinking skills as they use the data and calculations to draw conclusions and answer the text questions.
- Communication skills are fostered as they write up their answers for the lab reports (forms) and communicate with the peers in their group as they make the measurements necessary for the lab.
Instructor/TA Information

<table>
<thead>
<tr>
<th>TA Name</th>
<th>XXXXXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA Telephone number</td>
<td>979-XXX-XXXXX</td>
</tr>
<tr>
<td>Email address</td>
<td><a href="mailto:xxxxxxxxx@neo.tamu.edu">xxxxxxxxx@neo.tamu.edu</a></td>
</tr>
<tr>
<td>Office hours</td>
<td>(1 hour per section)</td>
</tr>
<tr>
<td>Office location</td>
<td>XXX, O&amp;M Eller Building</td>
</tr>
<tr>
<td>Lab Supervisor:</td>
<td>Dr. Shari Yvon-Lewis</td>
</tr>
<tr>
<td>TA Telephone number</td>
<td>979-458-1816</td>
</tr>
<tr>
<td>Email address</td>
<td><a href="mailto:syvon-lewis@ocean.tamu.edu">syvon-lewis@ocean.tamu.edu</a></td>
</tr>
<tr>
<td>Office location</td>
<td>412, O&amp;M Eller Building</td>
</tr>
</tbody>
</table>

Textbook and/or Resource Material

REQUIRED: Experiments in Oceanography by Dr. John H. Wormuth, ONLINE EDITION, 2011. It is only available online via WebCom. Can be purchased online at http://webcom.grxile.com/oceanography

Grading Policies

A total grade for each of the 11 labs will be composed by the following:

10% PreLab Online Assignments (completed through Webcom)
40% PostLab Online Assignments (completed through Webcom)
40% Forms and Participation
10% In class quizzes

Students will work in pairs or groups of 4 for each lab performing measurements, however all calculations and written lab reports will be done individually.

If you miss a lab without a university excuse or fail to do make-up work when allowed, you will receive a zero for that lab. Nothing will be accepted late and it is your responsibility to watch due dates for online assignments.

Tardiness:
At the beginning of each class a brief presentation will be given to inform you of any necessary procedural changes, equipment instructions or vital background information. You MUST be on time for this presentation. If you miss any part of this presentation, credit may be deducted from your participation. Whether or not you are present, you are responsible for knowing the information presented. If you are late on a day when a quiz is being administered, you will receive a zero for the quiz. If you are late, it is your responsibility to sign in on the attendance sheet or be marked as absent for the day.

Attendance policy:
If you miss a lab without documentation of a university excused absence, all associated assignments (online or forms) will be marked as zero even if completed.
University Excused Absences – [http://student-rules.tamu.edu](http://student-rules.tamu.edu) (under the “attendance” section)
NOTE: You must notify the instructor BEFORE you miss class that you will be absent or she is under no obligation to adhere to the university approved excuse. It is your responsibility to contact the instructor to make up the lab IF you have an excuse. You must turn in the appropriate excuse forms to the instructor before you make up the lab. You are responsible for getting any assignment due in that lab to the instructor before you make up the lab.

Make up labs:
If you miss a lab and have a University Approved Excuse, you will be allowed to make up the lab. Due to the nature of the lab schedule, you will ONLY be able to make up a lab DURING the SAME week you missed. The labs are scheduled every two weeks with the first one beginning at 8 am morning and the last one beginning at 6 pm (on Fridays the last lab begins at noon). You may not simply attend whichever lab you choose, and must set up a makeup time through me.

If you do not make up the lab during the same week missed, the total lab grade will be averaged into your final class grade as a zero (no online assignments related to that lab will be counted).

Safety:
In order to enable a safe learning environment, there are 18 cubbies available at the front of the room. ALL personal belongs must be stowed there for the duration of all labs. This includes cell phones, ipods, purses, book bags, etc. Since we are in a laboratory setting, everyone must wear closed toe shoes for every meeting of this course, and food and drinks are never to be brought into the lab. For the labs where simple chemicals (weak acid, silver nitrate) are used, safety goggles, gloves and aprons are provided and must be used. These are kept in the lab, so you are welcome to use them at any other time you would like. The location of other safety equipment (fire extinguisher, broken glass container, eye wash, etc.) found in the lab will be brought to your attention by the Teaching Assistant.

PreLab and PostLab Assignments:
All PreLab and PostLab Assignments are short, online assignments completed through the Emanual: Experiments in Oceanography (see above under “textbook” for WebCOM website). The PreLab assignments are to be completed AFTER reading the chapter of the Emanual and BEFORE coming to class for that topic. The PostLab assignments are to be completed AFTER performing the in class exercises for each topic.

Forms and Participation:
Each week while conducting your exercises you will be required to complete a form. This will include data collected during your exercises as well as answers to questions based upon the exercises. Participation will be lost for various reasons including, but not limited to: tardiness, lack of attentiveness, lack of preparation, and lack of participation in group activities.

Quizzes:
In class quizzes will be administered without warning and will generally be based on the required reading for that day, though they may contain information learned from previous labs.
Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>100-90%</td>
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<td>B</td>
<td>89.99 - 80%</td>
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<td>C</td>
<td>79.99 - 70%</td>
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<tr>
<td>D</td>
<td>69.99 - 60%</td>
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<td>F</td>
<td>59.99% and below</td>
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*There will be no rounding. There will be no curve.*

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topic Summary</th>
<th>Required Reading (WebCom)</th>
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<tbody>
<tr>
<td>8/25-8/29</td>
<td><strong>Syllabus</strong>&lt;br&gt;The expectations and requirements for this course will be discussed, and students will be introduced to WebCom (required).&lt;br&gt;&lt;br&gt;<strong>Safety</strong>: no special Personal Protective Equipment (PPE) required.</td>
<td>Bathymetry</td>
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<tr>
<td>9/1-9/5</td>
<td><strong>Bathymetry</strong>&lt;br&gt;Simple box models and computers show how dynamic the seafloor surface can be.&lt;br&gt;&lt;br&gt;<strong>Safety</strong>: no special Personal Protective Equipment (PPE) required.</td>
<td>Bathymetry</td>
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<tr>
<td>9/8-9/12</td>
<td><strong>Isostasy and Rock Density</strong>&lt;br&gt;Using simple materials of various densities, the principles behind plate tectonics are revealed.&lt;br&gt;&lt;br&gt;<strong>Safety</strong>: no special Personal Protective Equipment (PPE) required</td>
<td>Isostasy and Rock Density</td>
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<td>9/15-9/19</td>
<td><strong>Sedimentation</strong>&lt;br&gt;Deep-sea underwater sediment flows are recreated in lab using saltwater solutions with food coloring to distinguish density.&lt;br&gt;&lt;br&gt;<strong>Safety</strong>: no special Personal Protective Equipment (PPE) required</td>
<td>Sedimentation</td>
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<tr>
<td>9/22-9/26</td>
<td><strong>Albedo and Solar Radiation</strong>&lt;br&gt;The light energy from the sun warms surface waters and is reflected by ice, but only a fraction reaches depths.&lt;br&gt;Simple globes, tubes of water and earth surface samples provide exercises to study the sun's effects on the ocean.&lt;br&gt;&lt;br&gt;<strong>Safety</strong>: no special Personal Protective Equipment (PPE) required</td>
<td>Albedo and Solar Radiation</td>
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<tr>
<td>9/29-10/3</td>
<td><strong>Salinity</strong>&lt;br&gt;This fundamental property is measured for almost any study involving the ocean. Here the advantages and disadvantages of common methods will be reviewed.&lt;br&gt;&lt;br&gt;<strong>Safety</strong>: Silver Nitrate is used for a chemical titration - use caution and wear work clothes in addition to the required provided Personal Protective Equipment (PPE)</td>
<td>Salinity</td>
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</tbody>
</table>
Density
Sainity and temperature control density, which in turn, drives the major circulation patterns in the ocean. This lab demonstrates this intrinsic physical property. 
Safety: Dry Ice is used – use the Personal Protective Equipment (PPE) provided.

Climate Change
Weak acids demonstrate how carbon dioxide in the air effects the organism in the ocean. 
Safety: Use the Personal Protective Equipment (PPE) provided.

Waves
From tides to tsunamis, the properties and speeds of different wave types are investigated. 
Safety: no special Personal Protective Equipment (PPE) required

Plankton
Although this group is small in size, almost all life in the oceans depends upon planktonic organisms. Various types will be identified by microscope, drawn or counted. 
Safety: no special Personal Protective Equipment (PPE) required

Seasonality
The tilt of the earth that causes our seasons also effects the ocean. Simple statistics and color maps clarify how. 
Safety: no special Personal Protective Equipment (PPE) required

Nekton/Benthos
A wide variety of species inhabit the ocean; videos and preserved samples show a fraction of them and their behaviors. 
Safety: Specimens are in jars of Formalin or alcohol – be careful not to drop them - no special Personal Protective Equipment (PPE) required

11/17-11/21
Thanksgiving Break – NO LABS
11/24-11/28
Lab Finals (Section Dependent)

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu/

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Copyright Notice
All materials in this class are copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problems sets. Because of these materials are copyrighted, you do not have the right to copy the handouts, unless permission is expressly granted.

Plagiarism Statement
As commonly defined, plagiarism consists of passing off as one's own ideas, words, writing, etc., which belong to another. On accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academics, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Ecosystem Science and Mgmt, Wildlife and Fisheries Science

2. Course prefix and number: RENR 205

3. Texas Common Course Number: none


5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:

☐ Communication
☐ Mathematics
☒ Life and Physical Sciences
☐ Language, Philosophy and Culture
☐ Creative Arts
☐ American History
☐ Government/Political Science
☐ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:

☐ Yes
☒ No

8. How frequently will the class be offered? Fall and Spring

9. Number of class sections per semester: 2

10. Number of students per semester: each section up to 250, total 500

11. Historic annual enrollment for the last three years: 2010 - 675 2011 - 737 2012 - 631

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:

Course Instructor

Approvals:

Department Head

College Dean/Designee

Date 2/1/13

Date 1/31/13

Date 2/16/2013

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Ecology is by definition the study of interactions between organisms and their environment. Natural selection and evolution strongly influence these interactions, they are central to the concept of ecological systems, and they have direct relevance to human society by identifying solutions to contemporary environmental challenges. Emphasis is placed on science as a systematic means of acquiring information about our physical world via the scientific method. The course addresses a diverse range of natural components from individual genes to the entire Earth System. Interactions among these various hierarchies within natural systems are also emphasized.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Students are routinely challenged to reevaluate origins, consequences and solutions of a broad range of environmental challenges confronting human societies. This is based in part upon recognizing that ecological principles governing all life on the planet – life can not exist without the paramount ecological processes of energy flow, nutrients cycling and ecosystem processes of stability or resilience within ecosystems. Common and widely held ecological misconceptions are emphasized to promote critical evaluation and assessment of current ecological knowledge. Students are required to apply and strengthen their ecological knowledge outside the classroom by critically evaluating relevant readings assignments, websites, and lecture presentations.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students are provided with numerous opportunities to interpret multiple forms of scientific information, including tabular and graphical data. Information synthesis is promoted by encouraging students to identify interrelations, trade-offs, and cause-effect mechanisms among disparate processes and variables within ecological systems.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

The course is founded on quantitative scientific facts and the instructors go to great lengths to emphasize and familiarize students with this perspective. Various mathematical equations are evaluated as they relate to population growth, species biodiversity, population genetics, and chemical transformation associated with nutrient cycling. Students are familiarized with various scientific units and expressions, include the use of Systems International Units.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Students are challenged to express their views and provide their rationale for various answers and positions in question and answer sessions facilitated by the use of iclickers. The immediate feedback provided by this assessment technique facilitates knowledge sharing among students to promote deep learning.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number:  
RENR 205

Term:  
Fall/Spring

Meeting times and location:  
Section 501: MWF 09:10 am - 10:00am: ILSB 1105  
Section 502: MWF 01:50 pm - 02:40pm: ARCB 101

Course Description and Prerequisites

Principles of ecology using a holistic approach treating plants, animals and humans as one integrated whole; composition, structure, nutrient cycles and energetics of biotic communities; adaptations to environmental factors; biotic relationships; and problems of environmental quality and resource use.

Prerequisites: None

Learning Outcomes or Course Objectives

1. The primary objective of this course is to explore ecology, its applications, and ecological inquiry. As a result of taking this course you should be able to:

1. explain and distinguish between basic ecological concepts related to:
   a. effects of environmental factors on organisms and adaptations of organisms to their environment
   b. structure and dynamics of populations and communities and the role of disturbances
   c. structure of ecosystems including energy flow dynamics and nutrient cycling
   d. landscape pattern and process, and their interactions
   e. characteristics of major ecosystems and factors determining their spatial distributions

2. use ecological concepts and principles to interpret and critique current issues in environmental management and natural resource conservation

3. explain the scientific inquiry process and conduct simple ecological inquiries

Instructor Information

Dr. Mariana Mateos  
Dept. of Wildlife & Fisheries Sciences  
Heep Lab. Bldg. (Old Heep), Rm 320B  
Telephone: 847-9462  
E-mail: mmateos@tamu.edu

Dr. David D. Briske  
Ecosystem Science & Management Dept.  
Room 328  
Animal Industries Building  
Telephone: 845-7331  
Email: dbriske@tamu.edu

Dr. X. Ben Wu  
Dept. of Ecosystem Science & Mgmt  
Animal Industries Bldg., Room 209D  
Telephone: 845-7334  
E-mail: xbw@tamu.edu

Dr. Kirk O. Winemiller  
Wildlife & Fisheries Sciences Dept.  
Room 110-D  
Old Heep Building  
Telephone: 862-4020  
Email: k-winemiller@tamu.edu

Office hours: Mon. 3:00-4:00 PM, Wed. 10:30-11:30 AM, or by appointment
Teaching Assistant
TBA
Dept. of Ecosystem Sciences and Mgmt/Dept. of Wildlife & Fisheries Sciences
Contact via eLearning
Office hours: Fri. 10:30am-12:30pm, or by appointment, 103E Animal Industries Bldg. Annex

Textbook and/or Resource Material
Weekly reading needs to be completed before class and there will be a closed-book clicker quiz for the readings in each class.

Clicker
You are required to purchase an i>clicker2 remote for in-class quizzes and activities. i>clicker is a response system that allows you to respond to questions we pose during class, and you will be graded on your i>clicker2 responses. You must register your i>clicker2 remote online before Sep 5th. You must have voted in class on at least one question in order to complete this registration properly. Once you have voted on a question in our class, go to http://www.iclicker.com/registration. Complete the fields with your first name, last name, student ID, and remote ID. The remote ID is the series of numbers and sometimes letters found on the bottom of the back of your i>clicker2 remote. You are responsible to make sure that your clicker is functional and with power in every class period.

Grading Policies
(≥90% A, 80-89% B, 70-79% C, 60-69% D, and <60% F)
Weekly on-line quizzes 100 points
In-class clicker questions 100 points
4 unit exams (@100 points each) 400 points
Inquiry project and peer review 100 points
Total: 700 points

Attendance Policy
"The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located online at http://student-rules.tamu.edu/rule07."

Lecture Outline

UNIT I

Week 1 (Aug 27) Introduction to course
Part I – Introduction and Life in the Physical Environment
Chapter 1: Introduction
Chapter 2: Adaptations to the Physical Environment: Water and Nutrients

Week 2 Chapter 3: Adaptations to the Physical Environment: Light, Energy, & Heat
Chapter 4: Variation in the Environment

**Week 3**
(Sep 10)
Part II – Organisms
Chapter 6: Evolution and Adaptation
Chapter 7: Life Histories and Evolutionary Fitness
Chapter 8: Sex and Evolution

Week 4
(Sep 17)
Chapter 9: Family Society, and Evolution
Review (Sep 19)
**Exam I (Sep 21)**

**UNIT II**

Week 5
(Sep 24)
Part III – Populations
Chapter 10: The Distribution and Spatial Structure of Populations
Chapter 11: Population Growth and Regulation
Chapter 12: Temporal and Spatial Dynamics of Populations

Week 6
(Oct 1)
Chapter 13: Population Genetics
Part IV – Species Interactions
Chapter 14: Species Interactions
Chapter 15: Dynamics of Consumer-Resource Interactions

Week 7
(Oct 8)
Chapter 16: Competition
Chapter 5: The Biome Concept in Ecology
Review (Oct 12)

**UNIT III**

Week 8
(Oct 15)
Exam II (Oct 15)
Part V – Communities
Chapter 18 Community Structure
Inquiry project

Week 9
(Oct 22)
Chapter 19 Ecological Succession and Community Development
Online Lecture: Disturbance and Fire Ecology
Inquiry project

Week 10
(Oct 29)
Chapter 20 Biodiversity
Chapter 21 History, Biogeography, and Biodiversity
Inquiry project

Week 11
(Nov 5)
Part VI – Ecosystems
Chapter 22 Energy in the Ecosystem
Review (Nov 7)
Exam III (Nov 9)
Inquiry project

**UNIT IV**

Week 12
(Nov 12)
Chapter 23 Pathways of Elements in Ecosystems
Chapter 24 Nutrient Regeneration in Terrestrial and Aquatic Ecosystems
Inquiry project
Week 13  
(Nov 19)  
Part VII - Ecological Applications  
Chapter 25 Landscape Ecology  
Inquiry project  
Thanksgiving holiday - No class on Nov 23

Week 14  
(Nov 26)  
Chapter 26 Biodiversity, Extinction, and Conservation  
Chapter 27 Economic Development and Global Ecology

Week 15  
(Dec 3)  
Review (Dec 3)  
Reading days (Dec 5-6)

Week 16  
Exam IV for Section 501 (Dec 10, 8:00-10:00am)

In-Class Clicker Quizzes and Activities
There will be two kinds of clicker questions: closed-book clicker quizzes in class over the reading assignments, and open book questions for learning activities. The purpose of the clicker quizzes is to assess your understanding of the reading material and to guide classroom activities to improve your understanding.

For each class, the total points for clicker questions will be 5, of which 2 are participation points and 3 are based on performance in the clicker quiz questions. Participating in 50% or more of the clicker questions is required to obtain participation points in each class.

At the end of the semester, the lowest 20% of the clicker grades will be discarded, and the rest will be averaged. There will be no make-ups or adjustments for clicker quizzes or participation, except for situations with university excused absences.

On-line Quizzes
Weekly online quizzes will be given in eLearning, each with about 10-15 questions based on readings, lectures and assignments during the preceding week. Each quiz can be taken twice within the allowed time period; the higher of the two scores will be used. A portion of the exam questions will come from the quiz questions. Each quiz will begin at 5:00 am on Saturday and will be available until 5:00 am on the following Saturday. At the end of the semester, the lowest grade will be dropped and others will be averaged.

Inquiry Project
An inquiry project will be conducted during the second half of the semester. Each student will conduct an individual inquiry project that involves the full process of ecological inquiry - developing research hypothesis based on observations and published knowledge on the ecological phenomena, design and conduct sampling to collect data, analyze and interpret the data to test the hypothesis, writing a scientific report based on the investigation, participate in peer review of the reports, and improve one's report based on peer review feedback. Specific directions for the inquiry project will be provided in eLearning.

Exams
There will be 4 unit exams each consisting of 40 multiple choice questions worth 2.5 points each. Exams will be scantron graded; students must provide their own full page scantrons (NCS mp90651 or 0-101607-TAMU). For all exams, please bring your valid student ID card and a No. 2 lead pencil with an eraser. No other materials (notebooks, etc.) will be allowed in the room during exams. No personal electronic devices may be used during the exams.

Make-up Policy
A make-up exam will be given for students with a University-excused absence (http://student-rules.tamu.edu/rule07) for a unit exam. If physically able, you must register your excused absences with
course instructors within 5 days of the missed exam, quiz or assignment.

**Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

"An Aggie does not lie, cheat, or steal, or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Ecosystem Science and Mgmt, Wildlife and Fisheries Science

2. Course prefix and number: RENR 215

3. Texas Common Course Number: none


5. Semester credit hours: 1

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [x] Life and Physical Sciences
   - [ ] Language, Philosophy, and Culture
   - [ ] Creative Arts
   - [ ] American History
   - [ ] Government/Political Science
   - [ ] Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - [ ] Yes
   - [x] No

8. How frequently will the class be offered? Fall and Spring

9. Number of class sections per semester: 14

10. Number of students per semester: max of 196, 14 per section

11. Historic annual enrollment for the last three years: 2010 - 376  2011 - 390  2012 - 381

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:
   
   [Signature]

   [Date] 1/23/13

   Course Instructor

   Approvals:

   [Signature]

   [Date] 1/31/13

   Department Head

   [Signature]

   [Date] 2/6/13

   College Dean/Designee

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The objective of RENR 215 is to introduce students to the general principles, methods, and equipment for field-based investigation of the biotic and abiotic components of an ecosystem and their interactions, specifically: (1) Introduce the design and procedure of field ecological investigation, data analysis and report writing for quantitative description of ecosystems consisting of biological communities (interacting plant, animal and microbial populations) and their abiotic environment. (2) Acquaint students with the variety of ecosystems found in Texas, as well as a variety of species and some of their special adaptations to their environments.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Students are introduced to (or have reinforced from previous introduction, e.g., in RENR 205) basic theories and measurement techniques in ecological science, with a focus on the use of measurements to learn about the structure and function of ecological systems. These tools are then used to build a dataset that will be analyzed and results synthesized in a final ecological report. The data for that report come from four separate lab sessions, three of which involve field data collection. Students collect their own data, must identify relevant questions to ask and assess and analyze the data collected in the context of those questions.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students are asked to communicate their understanding orally and in writing throughout the course. Particular assignments meant to develop communication skills include the ecological report and a final oral presentation on an ecological topic. Each student writes their own report in phases, each phase is graded by the instructor and the student can then improve the next draft, including the final, based on feedback received. The final oral presentation is also done individually on a topic chosen by the student, in consultation with the instructor. These skills are also being developed in written assignments and through dialog encouraged in lab as methods are learned and data being collected.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

This course is strongly empirically-based. Students begin to collect their own data early on, are introduced to analytical tools that require basic statistical assumptions, and use data analysis and graphing tools throughout the semester. In multiple sessions, student must collect data, provide summaries and graphical representations of those data, and then
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

interpret and analyze their observations in the context of a specific question about ecological states and processes.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

The course activities are all structured as group activities (with the exception of the brief introductory lectures provided to orient and provide general instruction). Students must cooperate, especially during field data collection, including shared duties like making a measurement and recording it, setting up measurement quadrats, transects, and sharing and sometimes debating the identities of the biota they are tasked with reporting on. Teamwork is essential in completing the course activities and objectives.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course Description and Prerequisites

This course will introduce students to the general principles, methods, and equipment for field-based investigation of the biotic and abiotic components of an ecosystem and their interactions, specifically:

(1) Introduce the design and procedure of field ecological investigation, data analysis and report writing for quantitative description of ecosystems consisting of biological communities (interacting plant, animal and microbial populations) and their abiotic environments.

(2) Acquaint students with the variety of ecosystems found in Texas, as well as a variety of species and some of their special adaptations to their environments.

Prerequisites: None

Learning Outcomes or Course Objectives

1. Describe the basic components of coupled socio-ecological systems and interpret processes at the organism, population, community, ecosystem, landscape and global levels.
   - Define the functions of the different levels
   - Describe how and why plants compete and how competition can be measured
   - Describe plant growth processes
   - Describe how and why plants compete and how competition can be measured
   - Discuss spatial and temporal scaling in ecosystems
   - Describe population dynamics and interactions between organisms, including competition, predation, mutualism, etc.
   - Explain the differences and similarities of organism, population, community, and ecosystem scales

2. Identify plants and other organisms in their genetic and evolutionary context.
   - Recognize and organize adaptations and functional relationships
   - Discuss the implications of genetic change in the environment
   - Discuss the importance genetic variation within species and populations
   - Describe how and why landscape fragmentation affects biodiversity and conservation (e.g., endangered, invasive species)
   - Relate paleoecology to climate

3. Evaluate conceptual, statistical, and quantitative ecological models and systems thinking.
   - Draw a basic flow chart to represent ecological processes
- Describe key components of a model and the modeling process

4. Design management strategies for restoring and sustaining ecosystem goods and services and adaptive management concepts.
- Describe principles of ecosystem resilience

5. Illustrate critical thinking and demonstrate problem solving skills
- Apply critical thinking elements to demonstrate intellectual integrity
- Recognize problematic situations and predict possible outcomes
- Forecast a range of outcomes that may arise from climate change

6. Demonstrate environmental stewardship and professional and ethical behavior.
- Demonstrate environmental stewardship
- Design a sound management plan that sustains natural resource uses
- Identify current and past practices and or policies that have led deleterious effects

7. Recognize the need for lifelong learning and exhibit the skills necessary to acquire, organize, and reorganize new knowledge.
- Desire to continue education and knowledge in your field, and discuss current topics with your peers
- Read professional literature and apply information to the solution of real world problems
- Read professional literature and apply information to the solution of real world problems
- Locate the research papers available on the (USDA, P-2 Southern) web site

**Instructor Information**

<table>
<thead>
<tr>
<th>Name</th>
<th>Jason West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone number</td>
<td>979-845-3772</td>
</tr>
<tr>
<td>Email address</td>
<td><a href="mailto:jbwest@tamu.edu">jbwest@tamu.edu</a></td>
</tr>
<tr>
<td>Office hours</td>
<td>TBA</td>
</tr>
<tr>
<td>Office location</td>
<td>ANIN 413</td>
</tr>
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**Textbook and/or Resource Material**


Work Book – iBock, also available as an Adobe pdf on eLearning course page.

**Grading Policies**

- (A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: <60%)
- Attendance* (1st absence-5 pts, 2nd-5 pts, 3rd-10 pts) 20 points
- Quizzes (4 @ 10 pts each) 40 points
- Lab Assignments (points vary by assignment) 85 points
Ecological Report (Final Draft) 60 points
Topic Review Presentation 20 points
Total (100%) 225 points
Extra Credit Assignment +15 points

No late work will be accepted, except in the case of a university excused absence.
*Missing a lab without a written excuse will be counted as an absence.

Attendance Policy

"The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at http://student-rules.tamu.edu/rule07."

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Quiz/Work due</th>
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<tbody>
<tr>
<td>Aug 29</td>
<td>Introduction; Natural regions of Texas</td>
<td>Assign. 1 (PAA) due</td>
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<tr>
<td>Sep 5</td>
<td>Plant and animal adaptations (lab)</td>
<td>Quiz 1 (NRT &amp; PAA)</td>
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<td>Assign. 2 (EF) due</td>
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<tr>
<td>Sep 12</td>
<td>Environmental factors (lab &amp; field)</td>
<td>Quiz 2 (EF)</td>
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<td></td>
<td></td>
<td>Assign. 3 (PS) due</td>
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<tr>
<td>Sep 19</td>
<td>Population studies (lab)</td>
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<tr>
<td>Sep 26</td>
<td>Lentic Ecosystems (field)</td>
<td>Quiz 3 (L/L)</td>
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<tr>
<td>Oct 3</td>
<td>Lotic Ecosystems (field)</td>
<td>Assign. 4 (L/L) due</td>
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<tr>
<td>Oct 10</td>
<td>Oak Woodlands Ecosystems - I. Reconnaissance (field)</td>
<td>Assign. 5 (LCPT) due</td>
</tr>
<tr>
<td>Oct 17</td>
<td>Introduction to sampling Community sampling methods (lab)</td>
<td>Assign. 6 (Intro) due Assign. 7 (SM) due</td>
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<tr>
<td>Oct 24</td>
<td>Oak Woodlands Ecosystems - II. Plant community - savannah (field)</td>
<td>Quiz 4 (SM)</td>
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<tr>
<td>Oct 31</td>
<td>Oak Woodlands Ecosystems - III. Plant community - bottomland</td>
<td></td>
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</tbody>
</table>
forest (field)

Nov 7

Oak Woodlands Ecosystems -
IV. Animal communities (lab/field)

Assign. 8 (PC) due

Nov 14

Oak Woodlands Ecosystems -
V. Ecosystem restoration & mgt
Topic Review Presentations

Assign. 9 (ER) due
Presentations due

Nov 21

Thanksgiving week (no lab)

Other Pertinent Course Information

Much of the work done in RENR 215 is conducted in the field, regardless of weather conditions. Whenever field (outdoor) labs are scheduled, students should wear appropriate field clothing. If a field lab is scheduled and inclement weather occurs, the lab will move to a classroom. However, students should never assume a field lab would be moved indoors. A university van will be used for field trips.

If a university excuse absence occurs, students should immediately make arrangements with their TA to make up the lab before the end of the week or make other arrangements if that is not possible. All excuses must be registered within a week after the student returns to class. For absences without proper written excuse, up to 20 attendance points will be taken off the grade total and no make-ups will be given.

Ecological Report

The series of labs on Oak Woodland Ecosystems is designed, through field investigation and data analysis, to characterize the structure of the ecosystems, and to understand how the interactions of biotic and abiotic components as well as human activities, shape the structure of these ecosystems. Detailed investigation will focus on the upland savannah and bottomland forest ecosystems. The findings, as well as approaches used, will be documented in an ecological report. Below is a general guideline for the structure and content of this report. The instructor will provide additional instructions throughout the semester.

I. Introduction and Study Area
   - Describe the general environmental and biotic characteristics of the study area.
   - State the general goal of the investigation and why it is important or relevant to understanding the ecology and management of the ecosystems
   - State the specific objective(s) of the study.

II. Methods
   - Accurately describe the materials and procedures used in field sampling and data analysis. The description should contain sufficient information for others to repeat the procedure.
III. Results and Discussion

- Present the results of field sampling and data analysis in summary tables and/or figures. Refer to the figures and tables explicitly in the text.

- Address key questions, such as:
  
  - What similarities/differences exist between the upland and bottomland areas?
  
  - What is the ecological meaning and significance of the results?
  
  - What patterns of ecosystem structures were revealed through comparison of the biotic and abiotic components of different ecosystems?
  
  - What are the influences of human activities on the structure of these ecosystems?

- Recommend future studies needed to better our understanding of the system, and management approaches needed for the conservation and/or restoration of the ecosystems.

IV. References

- List any references, such as our lab manual and other books and papers that you cited in any of the above sections in a standard reference format.

- The finished report should be 4-6 pages long (1 inch margins, 1.5 line-spaced, no larger than 12-point fonts), plus Tables and/or Figures.

- Individual sections of the ecological report will be written as weekly assignments and revised based on the feedback provided by the instructor. Revised sections must be turned in for grades.

- Each of these writing assignments, for individual sections as well as the complete Ecological Report, must be emailed to your TA. In sending the files, the following formats should be followed:

  - The report must be saved in Microsoft Word, Open Office, or Adobe pdf format.

  - File names should include the initials of your first and last name and the last 4 digits of your UID number, plus the letter “A” and assignment number (without the “A#” for the complete Ecological Report).

  - Example – for Assignment 5 (Introduction section), the file name should be JD9944A5 for student John Doe whose UID is 454459944 (just JD9944 for the complete Ecological Report). Note there are no dashes or spaces. Follow this format exactly.

  - Files will be stored in a central database and may be checked for plagiarism (e.g., with resources such as Turnitin.com). Use of old reports or reports from other RENR 215 students will result in pursuit of an immediate grade of “F” for the class. See also the Aggie Honor Code discussed above.
Ecological Report Grading Sheet

Correct format: all parts with headings 10 pts
Word usage (correct grammar, complete sentences) 5 pts
Overall neatness and legibility 5 pts
Introduction and Study Area 15 pts
Methods 15 pts
Results & Discussion 10+20 pts
Total 80 pts

How to cite References

by Tamara McGuire

When you use a quote, fact, or idea that is not your own, you need to reference the source of that information. If not, you are plagiarizing someone else’s work, regardless of your intention. Referencing gives credit where credit is due, and provides your readers with a way to learn more about your subject and to verify your facts. Sometimes it is difficult to know when to reference something. If in doubt, go ahead and reference. It is not necessary to reference information that is common knowledge. For example, if you were to say in a report, “elephants are very large mammals”, there is no need to reference this. However, if you were to write, “Elephants in the country of Gabon weigh a maximum of 500 kg and can reach 3.5 m in height”, you should refer to the source of this information, as it is doubtful that you measured this yourself.

When you research your paper, it is a good idea to get into the habit of writing down the reference information in addition to the facts. It will help you later in making your list of references if you decide to use the information in your paper, and will give you a paper trail to follow if you need to go back and re-check something. It may also save you the embarrassment of mistaking an idea as your own, when it was actually already “claimed” by someone else (there is nothing wrong with agreeing, disagreeing, or expanding on someone else’s idea, just be sure to reference).

In order to reference, you will need to note the author(s), title of the article or book, the name of the journal in which it is published, the page numbers of the article, the year of publication, and the publisher. If you are citing a chapter in a book that has many contributors, you will have to list the editor of the book. There are different styles of referencing literature; in this class, we will only discuss one. This system is often called the Harvard system (Day 1988).

In the body of your paper, list the author’s last name and year of publication in parentheses after the item you are referencing. If there are two authors, list them both.

Ex. River dolphins are listed as a vulnerable species (Klinowska 1991).
Ex. River dolphins weigh 150 kg (Leatherwood and Reeves 1983).

If there are more than two authors, use only the last name of the first author, followed by the words “et al.” (which basically means “and others”), then the year of publication.
Ex. Dolphin populations were clustered along the Amazon River (Magnusson et al. 1980).

You will give the full reference citation at the end of your paper, in the part called
"References" or "Literature Cited". Citations should be arranged alphabetically, according to the first letter of the last name of the first author (confused yet?).

All this means is that a list of the following authors would look like this:


Magnusson, W. E., R. C. Best, and V. M. F. da Silva. 1980. Number and behavior of Amazon dolphins, Iniaceoffreensis and Sotalia fluvatilis in the Rio Solimoes, Brazil. Aquatic Mammals. 8:27-32. (These numbers indicate that the article was found in volume 8, pages 27-32).

Double check that any reference you used in your paper is in the "References" section, and that you didn’t list any papers in the ‘References’ section that you didn’t actually refer to in your paper.

*Recommended Readings (Evans library has both of them)*:


**Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cân Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Soil & Crop Sciences

2. Course prefix and number: SCSC 105

3. Texas Common Course Number: AGRI 1307

4. Complete course title: World Food and Fiber Crops

5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:
   □ Communication
   □ Mathematics
   □ Life and Physical Sciences
   □ Language, Philosophy and Culture
   □ Creative Arts
   □ American History
   □ Government/Political Science
   □ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   □ Yes
   □ No

8. How frequently will the class be offered? Fall and Sprng Semesters

9. Number of class sections per semester: 2 lecture sections and 10 lab sections

10. Number of students per semester: 115

11. Historic annual enrollment for the last three years: 247 204 218

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by: Phil
   Course Instructor
   Date: 1/24/13

14. Approvals:
    Wayne Smith
    Department Head
    Date: 1/29/13

15. Kim Dooley
    College Dean/Designee
    Date: 2-6-13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Unit 1 of the lecture part of the course examines the nature of faminies and malnutrition in the context of the quantitative past and future of human population growth at global and regional levels. Unit 2 describes the physiological processes of photosynthesis and photosynthetic partitioning, the breeding techniques of selection and hybridization, and their relationship to high yield crop production to meet the needs of the growing human population. Unit 3 explains the major techniques, powers, and limitations of genetic engineering to enhance future crop production. Most of the labs are devoted to the Team Science Project comparing the seedling growth of crop species in pure and mixed cultures requiring students to conduct a valid experiment with replications, randomization, data collection, statistical analysis, data expression, interpretation, and presentation. One lab requires the dissection of crop seeds, vegetative growth, and flowers. Finally, other labs have simulation exercises of selection, hybridization, and the protein probe strategy to find a gene.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Each exam requires the calculation and analysis of numerical/graphical data concerning population growth, crop growth, plant breeding, or genetic engineering. The Team Science Project requires the collection, analysis, and interpretation of data collected by each team from growing plants.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Three lecture exams require medium or long answer, including the construction and interpretation of numerical/graphical data. The Team Science Projects concludes in a poster presentation with tables, graphs, and words. Finally, each student must speak during an oral presentation of the poster to the lab instructor and class.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

On exams students use demographic data to calculate the number of births, deaths, infant deaths, percent of infant deaths, and percent of all deaths due to infant deaths. They also calculate and interpret leaf area index, harvest index, means, and standard deviations. No devices are allowed to assist calculations on the exams. Excel is used to calculate and graph means and standard deviations of treatments in the Team Science Project.
Texas A&M University
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Every lab project, especially the Team Science Project, involve students working in teams of two to four. They receive a team grade for these projects. These projects require cooperation in dissection, simulations, planting, fertilizing, watering, harvesting, bagging, weighing, data entry, calculations, graphing, interpretation and poster presentation. The professor-in-charge meets with each team individually to assist in the interpretation of the science project.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number  SCSC 105
Term  Fall Spring 2013
Meeting times and location  HPCT 103

Course Description and Prerequisites

This course will introduce students to plant relationships, structure, and development. They will also explore environmental factors affecting plants, the technological aspects of agricultural practices, and food production for an increasing population.

Prerequisites: None

Learning Outcomes or Course Objectives

1. Be able to conduct a valid experiment with replications, randomization, data collection, statistical analysis, data expression, and interpretation.
2. Identify, describe, and explain the major forms of malnutrition, especially related to infant mortality. Calculate and explain the demographic factors determining population growth and their relationship to malnutrition.
3. Describe the physiological processes of photosynthesis and photosynthetic partitioning, the breeding techniques of selection and hybridization, and their relationship to high yield crop production in the Green Revolution.
4. Describe the major techniques, powers, and limitations of genetic engineering.

Instructor Information

Name  Dr. Harry Cralle
Telephone number  979-845-9634
Email address  hcralle@tamu.edu
Office hours  TBA
Office location  HPCT 217B

Textbook and/or Resource Material

None listed.

Grading Policies

(A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: <60%)

Lecture Exam I (short/medium answers with calculations) – points and date TBA
Lecture Exam II (short/medium answers with calculations) – points and date TBA
Lecture Exam III (short/medium answers with calculations) – Final Exam Wed. May 6, 8:00 a.m. points TBA

Team Science Project (plant culture, measurements, statistical calculations, poster
construction and oral presentation of results) = 220 points
6 Team Lab Projects (dissections, problem solving, calculations) = 180 points (30 points/project)

LATE EXAMS AND PROJECTS REQUIRE PRIOR CONSENT OR OFFICIAL UNIVERSITY EXCUSE.
THERE WILL BE NO CURVE.

Attendance Policy

"The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at http://student-rules.tamu.edu/rule07."

Lecture Outline

I. World Food Supply: famine, malnutrition, and population
II. Foundations of Modern Crop Production
   A. Origin of agriculture as a genetic revolution
   B. The physiological basis of crop yields
      1. photosynthesis: location, light and dark reactions,
         Leaf Area Index and plant populations, leaf orientation
      2. photosynthetic partitioning: source-sink relationships and harvest index
   C. The Green Revolution
      1. traditional agriculture
      2. landrace plants of wheat: origin, agronomic traits, and production environment
      3. Green Revolution varieties: breeding, agronomic traits, and production environment

III. Biotechnology: genetic engineering and tissue culture:
   A. basic methodology
   B. a method of plant breeding

Lab Outline

Jan. 14-17: No labs
Jan. 22-25: Seeds, Vegetative Growth, and Reproduction (Lab Project #1)
Jan. 28-31: Doing Science I: Team Science Project Planting
Feb. 4-7: Plant Breeding I: Introduction (Lab Project #2)
Feb. 11-14: Plant Breeding II: Selection (Lab Project #3)
Feb. 18-21: Plant Breeding III: Hybridization (Lab Project #4)
Feb. 25-28: Doing Science II: Harvesting and Measurements of Height
March 4-7: Doing Science III: Measurements of Weight
March 11-14: Spring Break
March 18-21: Doing Science IV: Data Analysis using Excel
March 25-28: Doing Science V: Statistical Analysis (Lab Project #5)
April 1-4: DNA and the Basis of Genetic Engineering (Lab Project #6)
April 9-11: Poster Preparation and Lab Makeups
April 15-18: Poster Preparation and Lab Makeups
April 22-25: Presentation of Team Science Project

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides
comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

**Academic Integrity**

"An Aggie does not lie, cheat, or steal, or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

*For additional information please visit:* [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*